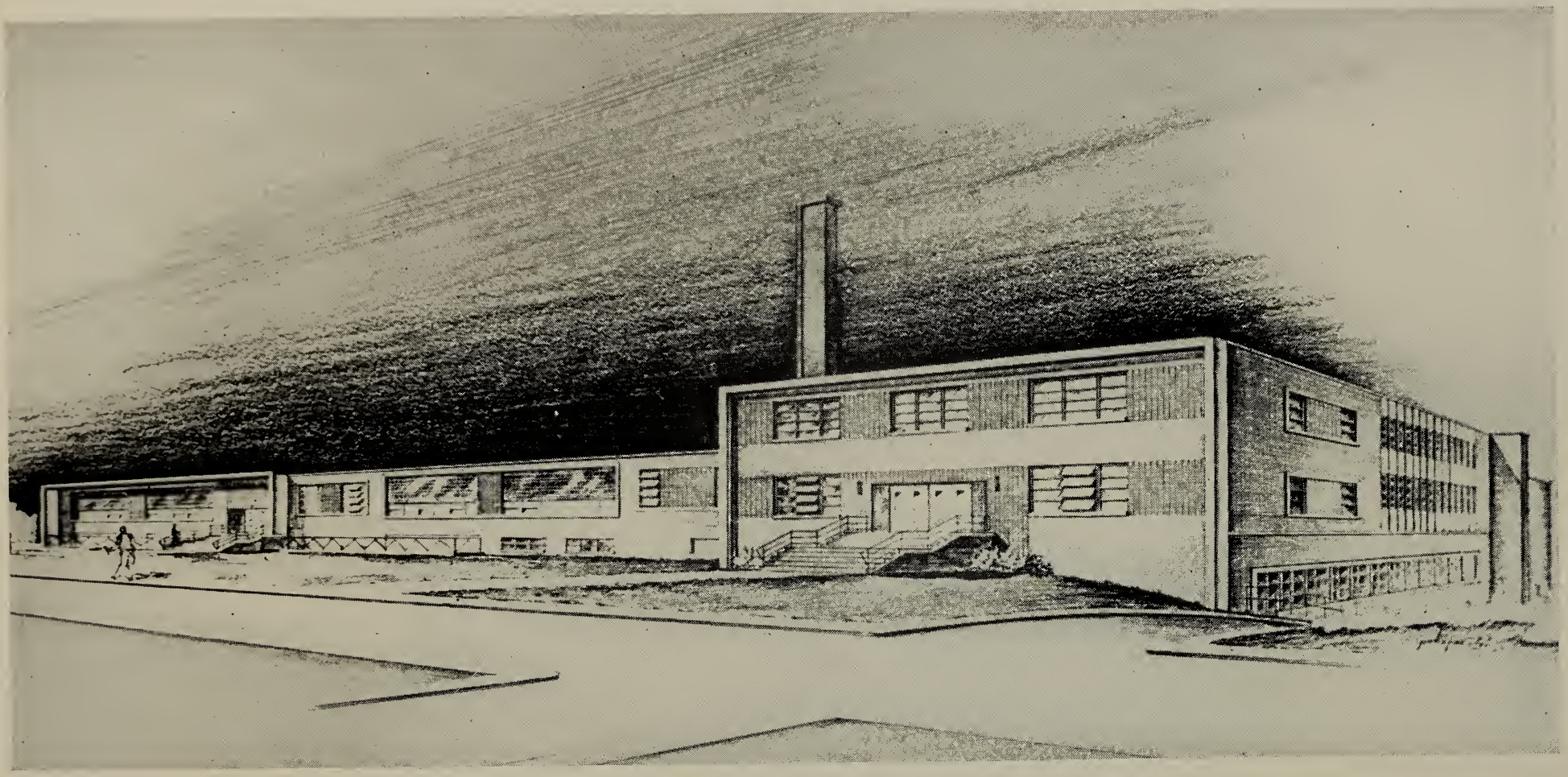
NEW BEDFORD INSTITUTE OF TECHNOLOGY

1957-1959



New Addition — Engineering and Science Building

New Bedford Institute

of

Technology

A College of Textiles and Engineering

COEDUCATIONAL

BACHELOR OF SCIENCE

Electrical Engineering
Mechanical Engineering
Chemistry
Textile Chemistry
Textile Design and Fashion
Textile Engineering
Textile Technology

MASTER OF SCIENCE

Textile Chemistry
Textile Engineering

CATALOGUE
1957 - 1959

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FOREWORD

The purpose of this issue of the Catalogue is to provide information for prospective students, or anyone else who may be interested, regarding the history, traditions, objectives, resources, programs, equipment and staff of the Institute.

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ACADEMIC CALENDAR

1957-1958

1957

September 4, Wednesday, 8:00 A.M. . . .	Freshman Registration
September 6, Friday, 8:00 A.M.	Upper Classmen Registration
September 6, Friday, 9:00 A.M.	Freshman Orientation
September 9, Monday, 8:00 A.M.	First Semester Begins
September 23-September 27 (Monday-Friday)	Freshman—Class Elections
November 11, Monday	Veterans Day—Holiday
November 27, Wednesday 12 M.	Thanksgiving Recess Begins
December 2, Monday, 8:00 A.M.	Thanksgiving Recess Ends
December 20, Friday, 3:50 P.M.	Christmas Recess Begins

1958

January 6, Monday, 8:00 A.M.	Christmas Recess Ends
January 13, Monday	Mid-year Examinations Begin
January 24, Friday	Mid-year Examinations End
January 23, 24	Student Registration for 2nd semester
January 27, Monday, 8:00 A.M.	Second Semester Begins
March 21, Friday, 3:50 P.M.	Spring Recess Begins
March 31, Monday, 8:00 A.M.	Spring Recess Ends
April 4, Good Friday	Holiday
May 12-May 17	Upper Classmen Election
May 26-June 6	Final Examinations
May 30, Friday	Memorial Day—Holiday
June 8, Sunday	Commencement and President's Reception

1958-1959

1958

September 3, Wednesday, 8:00 A.M. . . .	Freshman Registration
September 5, Friday, 8:00 A.M.	Upper Classmen Registration
September 5, Friday, 9:00 A.M.	Freshman Orientation
September 8, Monday, 8:00 A.M.	First Semester Begins
September 22-September 26 (Monday-Friday)	Freshman Class Elections
October 13, Monday	Columbus Day—Holiday
November 11, Tuesday	Veterans Day—Holiday
November 26, Wednesday, 12 M.	Thanksgiving Recess Begins
December 1, Monday, 8:00 A.M.	Thanksgiving Recess Ends
December 19, Friday, 3:50 P.M.	Christmas Recess Begins

ACADEMIC CALENDAR

1959

January 5, Monday, 8:00 A.M.	Christmas Recess Ends
January 12, Monday	Mid-year Examinations Begin
January 23, Friday	Mid-year Examinations End
January 22, 23	Student Registration—2nd semester
January 26, Monday, 8:00 A.M.	Second Semester Begins
February 23, Monday	Washington's Birthday—Holiday
March 20, Friday, 3:50 P.M.	Spring Recess Begins
March 30, Monday, 8:00 A.M.	Spring Recess Ends
April 20, Monday	Patriots Day—Holiday
May 18-May 22	Upper Classmen Elections
May 25-June 5	Final Examinations
June 7, Sunday	Commencement and President's Reception

OFFICERS OF BOARD OF TRUSTEES

Edmund Rigby, *Chairman*
Henri F. Horn, *Vice-Chairman*
Mrs. Ida Epstein, *Secretary*
Dr. John E. Foster, *Clerk of the Board*

BOARD OF TRUSTEES

Dr. John J. Desmond, Jr., *Commissioner of Education, ex-officio*
Hon. Francis J. Lawler, *Mayor, Municipal Bldg., ex-officio*
Miss Ruth B. McFadden, *Superintendent of Schools,* 166 William St., *ex-officio*

Term Expires 1957

Nils V. Nelson, 8 Temple Avenue, Winthrop, Mass. Office, N. V. Nelson Company, Cotton, 157 Federal St., Boston, Mass.

John A. Shea, 7 Davenport Terrace, Taunton, Mass. Representative for Neuss Hesslein Co., New York.

Philip Manchester, Superintendent King Phillip A. Division, Berkshire-Hathaway, Inc., 941 Grinnell St., Fall River, Mass. Home, Westport Harbor, Mass.

Henri F. Horn, Superintendent King Phillip E. Division, Berkshire-Hathaway, Inc., 372 Kilburn St., Fall River, Mass. Home, 447 New Boston Rd., Fall River, Mass.

Miss E. Ferris Almada, 6 Ocean St., New Bedford, Mass. Retired.

Term Expires 1958

Charles V. F. DeMailly, 710 County St., New Bedford, Mass. Assistant General Manager, J. C. Rhodes Co., P. O. Box 962, New Bedford.

Gerald Y. Murphy, 10 Freemont St., South Dartmouth, Mass. Manager Metropolitan Life Insurance Company, 113 Middle St., New Bedford, Mass.

Joseph A. Dancewicz, 12 Locust St., New Bedford, Mass. General Manager Soule Mill, New Bedford, Mass.

Edmund Rigby, 11 Fort St., Fairhaven, Mass. Treasurer, Berkshire-Hathaway, Inc., Hospital Trust Bldg., Providence, R. I.

Charles R. Dugdale, 292 Washington St., Fairhaven, Mass., C. R. Dugdale Co., Control Engineering, 290 Washington St., Fairhaven, Mass.

Term Expires 1959

Mrs. Ida Epstein, 8 Hawthorn Terrace, New Bedford, Mass. Medical Social Worker, St. Luke's Hospital Clinic.

William E. King, 622 County St., New Bedford, Mass., Supervisor, Dept. of Education, Rehabilitation Div. Duff Bldg., New Bedford, Mass.

John Vertente, Jr., 67 Mechanics Lane, New Bedford, Mass., International Representative United Textile Workers of America, 746 Pleasant St., New Bedford, Mass.

Clarence G. Bowman, 310 Hemlock St., New Bedford, Mass., Trucking & Rigging, 308 Mill St., New Bedford, Mass.

Joseph Dawson, Jr., 15 Elm St., So. Dartmouth, Mass., Knowles Loom Reed Works, Inc., P. O. Box 589, New Bedford, Mass.

ADMINISTRATION

John E. Foster, B.S., C.E., Sc.D., *President*

James L. Giblin, M.S., *Dean of Faculty*

Warren M. Holt, B.S., *Director of Admissions*

Louis Pacheco, Jr., B.S. in T.E., M.Ed., *Director of Evening School*

Augustus Silva, A.B., M.A., *Dean of Students*

Clifford N. Beck, B.S. in T.E., *Placement Director*

Leo M. Sullivan, B.S., M.A., *Director of Bookstore*

Mary F. Makin, *Treasurer*

FACULTY

JOHN E. FOSTER, B.S., C.E., Sc.D.
President

JAMES L. GIBLIN, M.S.
Dean of Faculty

AUGUSTUS SILVA, B.A., M.A.
Dean of Students

FACULTY COMMITTEE ON ORGANIZATION

JAMES L. GIBLIN, M.S.
HOWARD C. TINKHAM, B.S. in M.E.
FRANCIS TRIPP, B.S., B.S. in T.C., M.S., Ch.E.
LENINE GONSLAVES, B.S.
ANTHONY J. JOHN, B.S., M.A.
AUGUSTUS SILVA, A.B., M.A.
LEO M. SULLIVAN, B.S., M.A.

STUDENT ADVISORS

FRED BEARDSWORTH	1 TM—2 TM—2 TT—3 TT
CLIFFORD N. BECK, B.S. in T.E.	2 TTS
JOHN C. BROADMEADOW, B.S. in Ch.E., B.S. in T.C., M.Ed.	3 TC
EDWARD H. CLOUTIER	SM
ALDEN W. COUNSELL, B.S. in M.E.	3 ME
EDMUND J. DUPRE, B.S. in T.C.	4 TC
LOUIS E. F. FENAUX, B.S., M.S. in Ch.	2 TC
FERDINAND P. FIOCCHI, B.S.	1 TC
JAMES L. GIBLIN, M.S.	1 TE—1 TT
LENINE GONSALVES, B.S.	3 EE—4 EE
WARREN M. HOLT, B.S.	1 ME
ANTHONY J. JOHN, B.S., M.A.	2 ME
MARGOT NEUGEBAUER, B.F.A., M.F.A.	1 TD—2 TD
LOUIS PACHECO, JR., B.S. in T.E., M.Ed.	4 TE—3 TM
EVELYN RAMALHETE	3 TD—4 TD
HOWARD C. TINKHAM, B.S. in M.E.	4 ME
RICHARD WALDER, B.S. in E.E.	1 EE—2 EE

DEPARTMENT OF ELECTRICAL ENGINEERING

Lenine Gonslaves, B.S.
Professor in Charge of Department
Richard Walder, B.S. in E.E.
Instructor in Electrical Engineering
Hans Picard, B.S. in E.E.
Visiting Instructor in Electronics
J. F. Wareing
Visiting Instructor in Electronics

DEPARTMENT OF MECHANICAL ENGINEERING

Howard C. Tinkham, B.S. in M.E.
Professor in Charge of Department
Adam Bayreuther
Assistant Professor of Tool Manufacturing
John R. Barylski, B.S. in M.E.
Assistant Professor of Mechanical Engineering
Alden W. Counsell, B.S. in M.E.
Instructor in Mechanical Engineering
Conrad P. Richard, B.S.
Instructor in Mechanical Engineering
Joseph L. Roberts, B.S. in M.E.
Instructor in Mechanical Engineering

DEPARTMENT OF CHEMISTRY

Francis Tripp, B.S. in Ch. E., B.S. in T.C., M.S. in Ch., Ch.E.
Professor in Charge of Department
John C. Broadmeadow, B.S. in Ch.E., B.S. in T.C., M.Ed.
Associate Professor of Organic Chemistry
Edmund J. Dupre, B.S. in T.C.
Associate Professor of Dyeing and Finishing
Louis E. F. Fenaux, B.S. in Ch., M.S. in Ch.
Associate Professor of Analytical Chemistry
Ferdinand P. Fiocchi, B.S. in Ch.
Instructor in Inorganic Chemistry
Fred Tripp, B.S. in Ch.E.
Instructor in Chemistry
Kenneth H. Barnard, B.S. in Ch.
Visiting Professor, Lecturer in Textile Chemistry
Milton E. Parker, B.S.
Visiting Professor, Lecturer in Food Engineering

DEPARTMENT OF TEXTILES

James L. Giblin, M.S.
Professor in Charge of Department

DIVISION OF TEXTILE ENGINEERING

James L. Giblin, M.S.
Professor in Charge of Textile Engineering Division
Fred Beardsworth
Associate Professor of Weaving

Edward H. Cloutier
Associate Professor of Knitting
Frank Holden
Associate Professor of Yarn Preparation
Clifford N. Beck, B.S. in T.E.
Assistant Professor of Testing and Microscopy
Louis Pacheco, Jr., B.S. in T.E., M.Ed.
Assistant Professor of Yarn Preparation
Antone Rodil
Assistant Professor of Weaving
John T. Regan, A.B.
Instructor in Weaving
William A. Silveira, B.S. in T.E., M.S. in T.T.
Instructor in Textile Engineering
Edward S. Rudnick, B.S. in M.E., M.S. in T.T.
Visiting Professor, Lecturer in Quality Control

DIVISION OF DESIGN AND FASHION

James L. Giblin, M.S.
Professor in Charge of Division
Robert C. Booth
Instructor in Fine Arts
Margot Neugebauer, B.F.A., M.F.A.
Instructor in Textile Design
Evelyn Ramalhete
Instructor in Fashion Department

DEPARTMENT OF ENGLISH

Augustus Silva, A.B., M.A.
Professor in Charge of Department
Celestino D. Macedo, A.B., M.A.
Instructor in English

DEPARTMENT OF SOCIAL SCIENCE AND HUMANITIES

Leo M. Sullivan, B.S., M.A.
Professor in Charge of Department
Celestino D. Macedo, A.B., M.A.
Instructor in Social Science and Humanities

DEPARTMENT OF MATHEMATICS AND PHYSICS

Anthony J. John, B.S., M.A.
Professor in Charge of Department
Warren M. Holt, B.S.
Assistant Professor of Mathematics
William A. Silveira, B.S. in T.E., M.S. in T.T.
Instructor in Mathematics
Richard Walder, B.S. in E.E.
Instructor in Mathematics
Alden W. Counsell, B.S. in M.E.
Instructor in Mathematics

NEW BEDFORD INSTITUTE OF TECHNOLOGY 1898 -- 1957

Aims

The Institute of Technology is a college which prepares selected young men and women for careers in science and engineering. It seeks to obtain as students well-rounded young people who have achieved respectable academic records in high school and proved themselves as interested, good school citizens. The Institute feels that if such a student applies himself to the task he can meet the Institute's academic standards successfully. Although the training offered at the Institute is related primarily to scientific and industrial problems, the college recognizes that especially today an ever increasing proportion of the administrators of industry is drawn from technical professions. For this reason the Institute has included in its curricula a number of courses related to human nature and relations. The Institute, therefore, by setting standards of performance which require that the student master both theory and application, and by setting up courses to stimulate a student's interest in personal and industrial problems, seeks as its goal a well-rounded personality.

The effectiveness of this educational approach is indicated by the readiness with which the seniors at the Insttiute find good positions at graduation. In recent years many of its graduates find themselves holding positions of trust and responsibility as members of industrial management.

History

The Institute of Technology, one of the most modern and best-equipped institutes of its kind in the world, was established and incorporated by the Board of Trustees on August 1, 1895, under Chapter 475 of the Acts of 1895 of the Commonwealth of Massachusetts.

The first meeting of the Board of Trustees was held on January 27, 1896 and committees were appointed to supervise activities with relation to building, finance, machinery, education and other necessary executive functions. During the year 1897 the city of New Bedford appropriated $25,000 for the use of the school and the Commonwealth of Massachusetts appropriated an additional $25,000 the following year. With these funds the first of the present five buildings was constructed.

The first building, consisting of three stories and a basement, comprised about 22,000 square feet of floor space. During the first 25 years of the school's existence, four buildings were added; three in the form of additions and one, the recitation building, a separate structure, connected to the others by an overpass and tunnel. The new Science and Engineering building; the latest edition to the Institute was occupied in the Spring of 1956.

Since its founding the Institute has attempted to organize and conduct programs in technology which will equip the student to cope success-

fully with problems relative to industrial development, manufacturing, and research. It has been its policy to provide consistently instruction in both the theory and practice in all phases of dyeing, manufacturing, and distribution of textiles.

In addition to its program in textile education, the Institute has over the years introduced programs in technology relative to industrial areas other than textile manufacturing. These include courses of instruction in textile chemistry, textile design and fashion, mechanical engineering and electrical engineering.

The New Bedford Institute of Technology is proud of its professional standing and of the recognition it receives throughout the world. This recognition is evidenced by the representatives of various countries who have enrolled at the Institute. This representation as for the most part include students from Mexico, Israel, Ecuador, Salvador, Korea, Pakistan, Philippines, France, Chile, Bolivia, Canada, Formosa, Haiti, Brazil and Greece.

The New Science Hall

The new science and engineering hall completed in the Spring of 1956 comprises the major portion of the Institute's expansion program for more adequate classroom and laboratory facilities. This new addition, involving an outlay of approximately one million dollars, supplements the present facilities of the college with modern engineering, science and research laboratories. These include mechanical engineering, electrical engineering, physics, physical chemistry, and microbiology laboratories. In addition, this new construction houses all administrative offices, additional classrooms, an amphitheatre, a modern gymnasium. Plans are now being completed to add a new auditorium to the present expansion program.

Status

The New Bedford Institute of Technology is accredited by the Collegiate Board of Authority of the Commonwealth of Massachusetts. This authority grants a Bachelor of Science degree to graduates who have successfully completed the prescribed courses. The Collegiate Board of Authority has also granted permission to confer the Master of Science degree in Textile Engineering and Textile Chemistry.

The Honorary Master of Science degree is awarded to persons outstanding in their contribution to their communities, industry, science, finance and education.

The Institute is approved for the education of veterans under P. L. 550, 87th Congress and P. L. 894, 81st Congress.

The Institute is approved by the offices of the Attorney General for the admission of alien students.

The Institute also plays a prominent roll in the National Council of Textile Education. Students' chapters at the Institute are sponsored by the American Institute of Electrical Engineers, American Association of Textile Chemists and Colorists.

COLLEGE FACILITIES

Library

The Institute's library contains approximately 6,000 volumes, all of which pertain for the most part, to textile manufacturing, chemistry, and general engineering. Present plans call for a library in the new addition to house a minimum of 15,000 volumes. The library currently subscribes to approximately one hundred journals and publications published periodically by professional societies and industrial organizations.

The students also have access to the New Bedford Public Library. This library contains a very comprehensive collection of about 250,000 volumes. All courses offered at the institute require the student to make full use of all these facilities.

Bookstore

The Institute maintains a bookstore on the second floor of the administration building. This store is operated on a non-profit basis. All supplies, books, etc., are sold at very little above cost—this difference covers the cost of maintaining the store.

The student will find all the supplies he needs in this bookstore. Although the student is not required to purchase these supplies, he is advised not to buy elsewhere until he is certain those things he will buy are approved by the person in charge of the course in which the equipment is to be used. All supplies in the bookstore are approved.

ENVIRONMENT

The Institute is situated in the city of New Bedford, Massachusetts. It is located along the main bus line; both the bus terminal and railroad station are within walking distance.

New Bedford, an industrial city, is an especially suitable location for a school of this type. For many years it has been recognized as the world's largest manufacturer of fine cotton yarns and fancy fabrics. In recent years the industry of this city has become more diversified. Many new industries have found New Bedford, with its skilled manpower, particularly suited to their type of work. These industries include the world's largest manufacturers of electronic equipment along with an important manufacturer of condensers. One of the world's most important manufacturers has long been established here and more recently a leading manufacturer of machine tools has migrated to this industrial city.

Textile, machine tool, and rubber manufacturing or processing do not constitute the whole of New Bedford's diversified industry. This historical city has long been recognized as a leading fishing port. Each year, millions of dollars worth of fish are brought into this port, either for direct shipment or for New Bedford's large fish processing houses.

These industries, both old and new, afford the Institute many opportunities for planned inspection trips. This, we feel, is an invaluable aid in acquainting the student with the practical phases of his academic work.

Students wishing to remain in New Bedford during the summer recess will find many opportunities to work during this period. Because of the

nature of the city's industry, the student often finds work which is in his chosen field, thereby gaining practical experience as well as financial aid to meet the expenses incurred during the school year.

The civic center of New Bedford is a few minutes walk from the school grounds. Here the student will find the municipal building, the main library, veterans administration building and many other city and county buildings. Close to the civic center he will find the city's largest shopping and theatre district.

STUDENT EXPENSES

Tuition and General Fees

Tuition for all courses varies according to the residential status of the student. For residents of Massachusetts, the rate is one hundred dollars per year ($100.00); for residents of other States, the fee is two hundred and fifty dollars ($250.00). The rate for all foreign students is five hundred dollars ($500.00).

All prospective students must pay a fee of $2.50 when submitting their application for admittance.

LABORATORY AND SPECIAL FEES (for one academic year)

Athletics	$15.00
Student Activities	10.00
General Laboratory fees for all students	10.00
General Laboratory fee for 2nd, 3rd, and 4th year. Chemistry major students	20.00
Chemical fee (additional fee for all out-of-state and foreign students)	10.00
Graduation fee—all seniors	10.00
Registration fee (non-returnable) but applied to tuition in the event of matriculation	25.00
Registration fee (foreign students) (non-returnable) but applied to tuition in the event of matriculation	50.00
Books and supplies (estimated)	75.00
Late registration fee	5.00

REFUNDS

Any student withdrawing during the first six weeks of the semester is eligible to receive a refund according to the following schedule:

Request	Refunds
Less than one week	100%
Less than two weeks	80%
Between two and six weeks	40%
After six weeks	0%

STUDENT ORGANIZATIONS

Student Council

This is a body consisting of elected representatives from each of the four classes, and one faculty representative. Its purpose is to study problems of the student body, class activities, and the various matters of

student organization. The council represents the student body in proposing changes or making recommendations to the college authorities.

Interfraternity Council

An organization consisting of members representing each of the men's and women's fraternities. One member is chosen from the faculty. This body determines the rushing season and the rules which control rushing. It has charge of enforcement of all institute rules regarding membership in fraternities.

Fraternities

There are three national, professional and social men's fraternities and one women's sorority.

These are: Phi Psi, Delta Kappa Phi, Sigma Phi Tau, Kappa Sigma Phi. These fraternities maintain chapter rooms and all play a major part in the social and athletic affairs of the Institute.

Athletic Association

This is a body consisting of representatives of the Board of Trustees and representatives of the faculty. The purpose of this group is to determine all athletic policies. The athletic council determines the budgets for each sport and all schedules must meet their approval.

College Glee Club

For all students interested in music, a Glee Club has been organized. The Glee Club is supported by the Student Council. The purpose of the Club is to furnish both a musical and social outlet to its members, who meet weekly with a capable director, preparing a repetoire of songs for different functions during the school year.

Mechanical Engineering Club

This organization is available to students in the Sophomore, Junior and Senior classes majoring in Mechanical Engineering. The purpose of this group is to develop in the student a better concept of industries' problems, and the benefits of affiliation with professional engineering societies. This is accomplished by sponsoring technical sessions, arranging plant tours, attending joint meetings with professional societies, and holding dinner meetings with industrial representatives as invited guests.

Student Affiliate Branch of the American Institute of Electrical Engineers

This student branch was established February 2, 1956. The objective of the A.I.E.E. student affiliate is to provide an organization through which the technical development and ideas of the engineering profession outside the classroom may be shared with the students and to provide the student with the opportunity to contribue also. Any engineering student registered in a four-year course is eligible for membership.

Student Chapter of the American Association of Textile Chemists and Colorists

This chapter is a student unit of the national organization whose student membership is open to students who are preparing for a career

"in the application of dyes or chemicals in the textile industry", in the manufacture of research of these products, or "in the testing of textile materials." It holds regular meetings of its own, and participates in the activities of the regional section (The Rhode Island Section) of the parent organization.

Newman Club

The Newman Club is an organization of Catholic college students dedicated to the wider application of the teachings of the Catholic Faith to their private and social lives. The Club has a chaplain to minister to the spiritual needs of the members. This organization is affiliated with the National Federation of Newman Clubs.

Camera Club

An organization for all students interested in photography as a hobby. A well-equipped darkroom is available for processing and the application of most photographic techniques. Color processing equipment is being added as rapidly as possible. Many of the photo illustrations for the student publications and the year book are handled by the Camera Club.

Circle K Club

This organization is sponsored by Kiwanis International. It is a service organization similar to Kiwanis and other service clubs. It serves at the college level. It is a character building group which offers service on the campus, to the school and to the community.

Tech Talk

Tech Talk is the official student publication on campus. It is managed and published solely by student effort. A faculty member is appointed by the administration to act as an advisor to the group. This publication appears monthly and it is supported in greater part by a portion of the student's activities fee. The purpose of this publication is to make available to the student body a channel for expression and information.

Fabricator

The student annual illustrated publication sponsored by the senior class.

ACADEMIC PROMOTION

In general, a student to be classified as a Sophomore must have obtained at least two-thirds of the semester hours prescribed in his Freshman program plus an equal number of quality points; as a Junior at least three-fourths of the prescribed semester hours for the previous two years plus an equal number of quality points; and as a Senior at least nine-tenths of the prescribed semester hours for his previous three years plus an equal number of quality points.

STUDENT CONDUCT

It is to be assumed that students matriculating in any one of the various programs offered by the Institute have attained sufficient maturity and developed those attributes conducive to an adequate preparation for

professional careers. This means that the administration at the Institute expects that each student will have developed an ability to get along well with others and to maintain a personal high standard of honesty and moral conduct. The Institute has not established any rigid rules restricting the conduct of individuals or groups of students. However, it will be understood that a student may be dropped from the rolls or subjected to other disciplinary action, for conduct which is illegal, immoral, or not in keeping with the best interest of the Institute.

GUIDANCE AND COUNSELING

Because the Institute is a small college, a close personal relationship is maintained between the student body and the faculty. Through the Dean of Students and Faculty Advisors, assistance is given to students during the year in the scheduling of their classes and in solving problems which may arise during the year. Whenever it is deemed necessary, correspondence and interviews are entered into between the Dean of students and families of those students whose performance is not considered satisfactory.

The freshman year begins with a Freshman Orientation Period immediately preceding the fall term. Registration, general intelligence and aptitude tests are completed, orientation lectures on campus and professional life are given. Interpretive results of the intelligence and aptitude tests are available to the students, to the Dean of Students, and to the faculty advisors to aid in the making of decisions throughout the student's college carrer.

Laboratory and drawing courses are arranged so that the average student will not find it necessary to supplement the scheduled hours with outside preparation.

An average of one and one-half hours of preparation for each hour of lecture or recitation will be required of freshmen.

Each student's performance is evaluated four times during the academic year; that is, his scholastic standing is obtained at the end of the first eight weeks and at the end of each semester. This procedure is followed in order to allow the administration to inform the student of his standing and advise him more effectively as to the need for remedial action should such action be required.

ADMISSION REQUIREMENTS

Following are the requirements for admission to the under-graduate courses of study at the Institute:

1. The satisfactory completion of a four year high school course or its equivalent, yielding 16 units of secondary school work. A unit is the equivalent of at least four recitations a week for a school year.
2. The primary basis for admission is rank in high school graduating class. All applicants are required to take a college aptitude test administered by the Institute in January and May. The admission of any applicant with low high school standing is

contingent upon a reputable scoring on the college aptitude test. Information concerning the examination dates and procedures for taking this test may be obtained directly from the Director of Admissions.

3. Sixteen units of secondary school work must be offered, selected according to the following requirements:

English	4
Algebra	1
Plane Geometry	1
U. S. History	1
Physics or Chemistry (including lab.)	1

The Institute recommends that candidates for admission to the curricula in engineering (Mechanical, Electrical, Textile) complete the following secondary school courses in addition to those required above:

Intermediate Algebra
Chemistry
Physics

Candidates for admission in the Textile Chemistry curriculum must offer one unit of chemistry.

Exceptions to the requirements of this paragraph will be made for students whose combined score of rank in the graduating class and rank on an aptitude test administered by the Institute is sufficiently high.

4. Electives may be taken as follows:

Math.—unlimited
Physical Science—unlimited
Social Studies—not more than three units
Foreign Language—not more than three units
Other high school credits—varied and subject to evaluation by Director of Admissions

5. Candidates for admission to the Textile Design and Fashion curriculum and those applying for a non-degree program are required to meet only the requirements in paragraphs 1 and 2 above.

HOUSING FACILITIES

Dormitory facilities are not provided by the Institute. For non-residents, however, excellent accomodations with private families living within walking distance of the Institute are readily available. A list of approved rooms is maintained and arrangements may be made through the Institute to secure suitable living quarters.

ENDOWMENTS AND SCHOLARSHIPS

The New Bedford Institute of Technology offers a number of scholarships made possible through private and industrial endowments.

A number of tuition scholarship awards are available to upper classmen and a limited number are available to prospective freshmen.

All scholarship awards are made on the recommendation of the faculty committee of the Institute or a committee appointed by the donors of

the various scholarships. All applications for scholarship consideration should be made directly to the president of the Institute.

The following tuition scholarships are available to upper classmen.

1—William Firth Scholarship:

A one-hundred dollar tuition scholarship made available from the William Firth Memorial Fund. Available to students in all courses.

2—The Manning Emery, Jr. Scholarship:

A one-hundred dollar tuition scholarship made available from the Manning Emery, Jr. Memorial Fund. Available to students in all courses.

3—The Neuss Hesslein and Company Scholarship:

Two one-hundred dollar tuition scholarships made available from the Neuss Hesslein and Company Scholarship Fund. Available to textile students only.

4—Aerovox Scholarships:

Two two-hundred dollar annual awards to students in mechanical or electrical engineering or chemistry. Preference will be given to close relatives of Aerovox employees.

5—Acushnet Process Scholarships:

Two one-hundred dollar tuition scholarships to students in mechanical or electrical engineering or chemistry. Available to residents of greater New Bedford and preference will be given to close relatives of Acushnet Process employees.

6—Berkshire-Hathaway Inc. Scholarships:

Two annual awards of $125.00 to students in textiles who have indicated an interest in pursuing their textile careers in New England.

7—Morse Twist Drill Scholarships:

Two one-hundred dollar tuition scholarships to students in mechanical or electrical engineering or chemistry. Preference to alumni or active members of Junior Achievement.

8—Barnet D. Gordon Family Foundation Scholarship:

A one-hundred dollar tuition scholarship to a student in textiles.

9—Revere Copper and Brass Scholarships:

Two one-hundred dollar tuition scholarships to students in mechanical or electrical engineering or chemistry.

10—Sea Plant Chemical Works, Inc. Scholarship:

A one-hundred dollar tuition scholarship available to a student in chemistry.

11—Jacques Wolf & Company Scholarship:

A one-hundred dollar tuition scholarship to a student in textiles.

12—J. C. Rhodes Scholarship:

A four-year tuition scholarship each year to students in mechanical or electrical engineering or chemistry.

13—Sandoz Chemical Scholarship:

A one-hundred dollar tuition scholarship to a student in textiles.

14—Everett H. Hinckley Scholarship:

A one-hundred dollar tuition scholarship made available by the New York Chapter of the New Bedford Institute of Technology Alumni Association to a freshman going into his sophomore year. It is offered in memory of Everett H. Hinckley, former head of the Institute's Chemistry Department.

15—Under an ordinance of the City of New Bedford, five four-year tuition scholarships will be awarded each year to graduates of the New Bedford High School, Holy Family High School, Vocational High School and St. Anthony High School. This will be distributed as follows: two to graduates of New Bedford High School, one to a graduate of each of the other schools.

16—Several other scholarships are available under the auspices of the Scholarship Fund of the New Bedford Institute of Textiles and Technology.

AWARDS

The National Association of Cotton Manufacturers Medal:

The National Association of Cotton Manufactureres offers a medal, to be awarded each year to the student in the Textile Engineering graduating class who shows the greatest proficiency in scholarship. This is determined by an examination of all students records and the medal is awarded to that student having the highest average according to the credit point system of determining averages.

The competition for this medal is also open to all evening students who have completed the full course of study required for a degree in Textile Engineering. The association offering the medal has made it a condition of the award that at least four members of the graduating class be eligible to the competition.

Everett H. Hinckley Scholarship Award:

This is an annual award of 100 dollars made by the New York Chapter of the New Bedford Institute of Textiles & Technology Alumni Association. It is offered in memory of Everett H. Hinckley, former head of the Institute's Chemistry Department.

The William E. Hatch Award:

This award is made to the member of the freshman class of Textile Engineering, who has the highest credit point average for the year. It is awarded by the Alumni Association of the Institute, to commemorate the day of William E. Hatch's retirement from the presidency of the Institute. This award is sponsored by the Alumni Association.

The Morris H. Crompton Award:

This award is made to the student of the graduating class of Mechanical Engineering, who has the highest four year average according to the

credit point system of determining averages. It is awarded in honor of Morris H. Crompton, former head of the Department of Engineering. This award is sponsored by the Alumni Association.

The Fred E. Busby Award:

This award is made by the Alumni Association to the student of the graduating class of chemistry, who has attained the highest four year average according to the credit point system. It is presented in Honor of Fred E. Busby, former head of the Department of Chemistry.

The American Association of Textile Chemists and Colorists Award:

This award is presented annually to the outstanding senior in the Textile Chemistry Course. The award is in a form of a book.

The Samuel Holt Designing Award:

This award is sponsored by the Alumni Association. Presentation is made, annually, to a graduating student in recognition of excellence in Textile Designing. The award is made as an expression of appreciation and grateful acknowledgment on the part of the Alumni in Mr. Holt's honor. Mr. Samuel Holt, former head of the Designing Department retired from the faculty in 1938. He is respectfully remembered by all who studied under him for his kindness, patience, understanding and ever-willing desire to assist the individual student just a little bit more.

The American Association of Textile Technologist Award:

The basic objective of the American Association of Textile Technologists is to encourage in the broadest and most liberal manner the ad vancement of textile technology. The furtherence of this objective is certain progress by the Association's encouragement in the field of textile education.

In order to fulfill this objective, the American Association of Textile Technologists is presenting the placque to an outstanding student, who has been selected by the faculty of the New Bedford Institute of Textiles and Technology as that member of the graduating class who as an undergraduate has shown outstanding achievement in scholarship, technical ability, industry, judgment, leadership, reliability and ability to work and cooperate with others.

The Phi Psi Award:

The Phi Psi award is a beautiful pocketbook and leather case set made of ostrich leather and lined with calfskin. Each article is embossed with the coat of arms of the fraternity, also the recipient's name in gold. In addition, he is presented with a suitably engraved certificate, certifying the honor that has been given him. This award is presented, regardless of fraternity affiliations to the outstanding graduating student on the basis of his scholastic standing which includes analytical powers, accuracy and reliability. In addition he must be possessed with leadership, initiative and personality.

The Delta Kappa Phi Award:

The Delta Chapter of the Delta Kappa Phi Fraternity, the oldest professional textile fraternity in the world, sponsors this award. This trophy and its accompanying certificate is awarded annually to the member of the graduating class who, in the opinion of the selection committee, has done the most for New Bedford Institute of Textiles and Technology in athletics during his four years here. His qualities of leadership, sportsmanship and fair play are all considered.

Honorable Samuel Ross Memorial Medal:

This medal is presented to the outstanding sophomore student in Textile Engineering and Textile Technology. It is awarded by the Alumni Association of the Institute in honor of Samuel Ross co-founder of the Institute and for many years Chairman of the Board of Trustees. This award is sponsored by the Alumni Association.

Arthur W. Forbes Award

Arthur W. Forbes Award was established in memory of the late Arthur W. Forbes, President of the J. C. Rhodes Company. This award consists of two monetary prizes of $75.00 and $25.00 to be given annually on Class Day to the two members of the senior class submitting papers evidencing high standards in technical report writing.

Textile Veterans Association Award

This award is presented by the Textile Veterans Association to the outstanding veteran in the graduating class majoring in a textile course. His standing is determined by an examination of all students records. His qualities of leadership, sportsmanship and fair play are all considered.

Design and Fashion Award

A citation of excellence presented annually to a graduate who has majored in Textile Design and Fashion. This award is sponsored by the Alumni Association.

Electrical Engineering Award

A citation of excellence presented annually to a graduate who has majored in the Electrical Engineering Course. This award is sponsored by the Alumni Association.

Mathematics Achievement Award

This award, a book of standard mathematical tables, is sponsored annually by the Chemical Rubber Company and presented to a member of the freshman class for excellence in freshman mathematics.

Physics Achievement Award

The current edition of the HANDBOOK OF CHEMISTRY AND PHYSICS is awarded to the engineering major achieveing the highest standing in physics. This prize is presented annually by the Chemical Rubber Company.

ATHLETICS

The New Bedford Institute of Technology, its administration and faculty, approve and encourage a full program of inter-collegiate and intramural athletics. The Athletic Association plans and provides for the fullest possible program of inter-class and inter-fraternity sports.

Varsity teams include baseball, basketball, tennis, and soccer. The Institute schedules for its games most of the recognized colleges of its athletic class. These schedules include many varied and interesting road trips.

The Institute is an active member of the National Association of Intercollegiate Athletics and the Southern New England Conference.

ADVANCED STANDING

Undergraduates of other recognized colleges who apply for admission to New Bedford Institute of Technology as transfer students with advanced standing must present an official statement of honorable dismissal, a transcript of their college record, and a marked copy of the college's catalog to describe courses completed and offered for transfer credit. Only those courses will be accepted which fit the curriculum requirements of the Institute, and for which the earned grade was "C" or better

GRADES AND GRADUATION REQUIREMENTS

Requirements.

The requirements for graduation are the satisfactory completion of all courses in one of the prescribed curricula of the Institute, with a total of credit points not less than the minimum number of credit hours required in the individual curriculum.

Grading System.

The following grading system shall be used in determining the above:

A — Excellent (90 and above)

B — Good (80-89)

C — Passing (70-79)

D — Passing without credit points (60-69)

F — Failure (below 60)

I — Incomplete—A grade of incomplete may be assigned by the instructor when a legitimate reason exists for the failure to complete the work on the date required. This grade indicates credit is withheld without prejudice to the student's rating pending completition of the required work. A grade of "I" must be removed within 30 academic calendar days after the completion of the course.

WITHDRAWALS

1. No freshman will be permitted to withdraw from a course.
2. An upper-classman may be permitted to withdraw from a course, without penalty, only during the first six weeks of the semester.

Withdrawals after the first six-week period will be recorded as failures. To withdraw from a course without penalty a student must

a. notify his faculty advisor of his intention and

b. receive permission from the Dean of Students to withdraw from a course.

If a student withdraws from a course without permission, a grade of "F" will be assigned for the course.

3. Any student withdrawing from the institute must first consult with the Business Office. Failure to do so will prevent the institute from giving the student a certificate of honorable dismissal.

A deficiency resulting from failure may be removed by (1) repeating the course the next time it may be re-scheduled, (2) securing transfer credit in a comparable course from some other accredited institution. Only grades of "C" or better are accepted for transfer credit. Such courses for transfer must be approved in advance by the Dean of Students. When a subject which has been failed is repeated at the institute, the new grade is entered on the student's record in addition to the original grade.

Credits and Averages.

The Institute operates on the credit-point system. Term credits represent the number of hours of work completed successfully; credit points are determined by the grade earned; (A) 3 credit points for each credit hour; (B) 2 credit points for each credit hour; (C) 1 credit point for each credit hour. A student is not required to repeat a subject in which a grade of "D" is obtained; he receives, however, no credit points to be counted toward the minimum number required for graduation. In order to be granted a degree, a student is required to have a minimum number of credit points equivalent to the number of credit hours required for graduation in his curriculum. In other words, he must obtain an overall average of "C" or 1.00.

a—Standing for any period of time is the result obtained by dividing the number of credit points received by the student by the number of credit hours for which he was registered.

b—Transfer credits and points are not included in scholastic averages.

Eligibility.

No student placed on the probation status is eligible to participate in athletics or hold an elective office in non-athletic activities.

Dean's List.

A student who, at the end of a semester, has a high scholastic standing will be placed on the Dean's list. This list will be posted on the official bulletin boards.

Degrees with Distinction.

With highest distinction

With high distinction

With distinction

Attendance Regulations.

Daily attendance records are to be kept by the instructor in charge of each lecture or laboratory class. For each semester, a student is allowed three (3) credit-hour absences from each lecture or laboratory class. One (1) lecture hour is equivalent to one (1) credit hour; two (2) laboratory hours is equivalent to one (1) credit hour; that is, a student is allowed to absent himself from three (3) lecture hours or six (6) laboratory hours in any one course for each semester. Any student exceeding three (3) credit hours absences from any one class (lecture or laboratory) must first consult with the Dean of Students to obtain permission to re-enter that class. Any credit hour absence immediately preceding or succeeding a holiday will be equivalent to two (2) credit hour absences. All instances of unreasonable tardiness will also be reported to the Dean of Students. Any student exceeding the prescribed number of cuts or showing evidence of unreasonable tardiness will be dropped from the course.

COURSES OF STUDY

Degree Courses—4 Years

Electrical Engineering

Mechanical Engineering

Chemistry

Textile Chemistry

Textile Engineering

Textile Technology

Textile Technology—Knitting Option

Textile Design and Fashion

Diploma Courses—3 Years

Chemistry, Dyeing and Finishing

General Textile Manufacturing

Knit Good Manufacturing

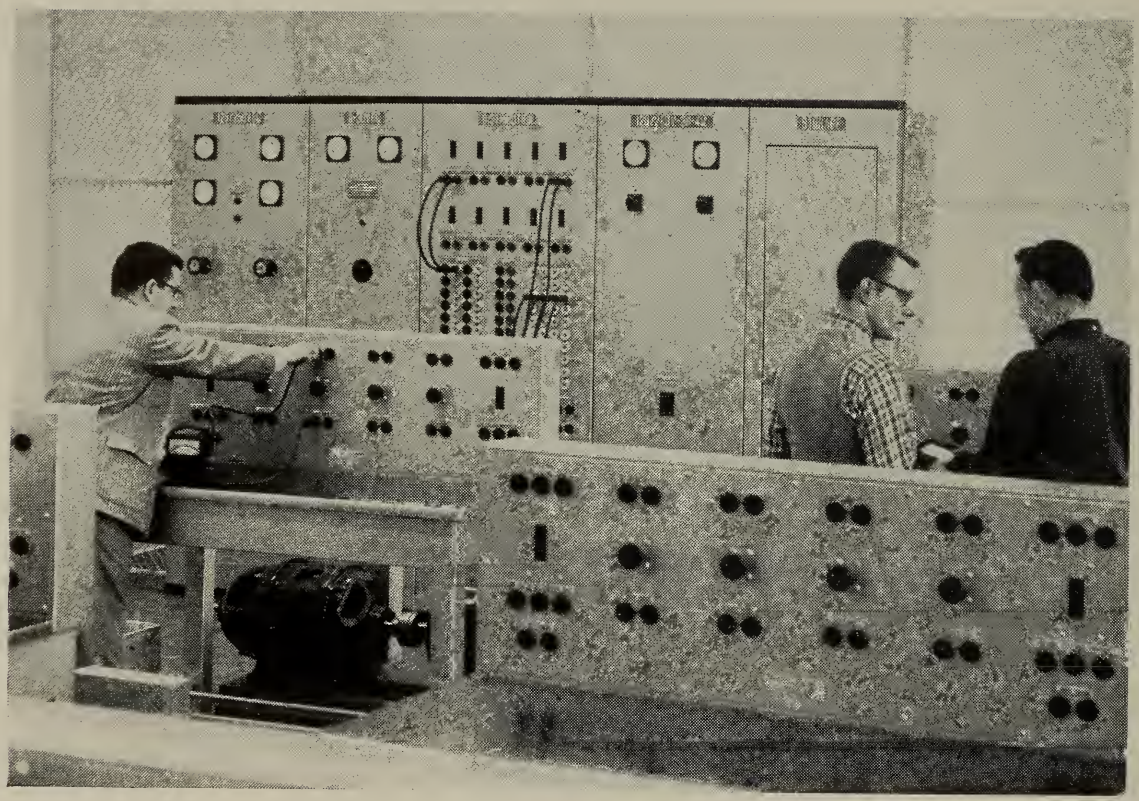
Certificate Courses—2 Years

Sewing Machine Maintenance

Textile Technician

Code to Course Numbers

Chemistry	Ch
Electrical Engineering	EE
English	E
Mathematics	M
Mechanical Engineering	ME
Physics	P
Social Science and Humanities	H
Textile Design and Fashion	TD
Textile Engineering	TE



Electrical Engineering Laboratory

Electronics Laboratory

ELECTRICAL ENGINEERING

Electrical engineering is that profession concerned with the generation and utilization of electrical energy. The field of electrical engineering has expanded and continues to expand at a very rapid rate, so that today its influence is felt in almost every area of human endeavor. With this expansion many new areas of specialization—areas in instrumentation, computation, guidance, control and automation—have become part of the field. Yet only yesterday these areas were unknown. Tomorrow many of our present-day students will find themselves working with aspects of electrical engineering which are today unknown.

The department of electrical engineering offers a course in electrical engineering geared to provide the student with the background necessary to meet the challenges of our time and, it is felt, those to come. Accordingly, emphasis upon the mathematics, the fundamental sciences and the basic engineering courses is the key to the electrical engineering curriculum. Specialization is left for industry or graduate study.

BACHELOR OF SCIENCE

MAJOR—ELECTRICAL ENGINEERING

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math	5	0	5	M-102	College Math	5	0	5
Ch-101	General Chemistry	3	2	4	Ch-102	General Chemistry	3	2	4
E-101	Eng. Composition I	3	0	3	E-102	Eng. Comp. II	3	0	3
ME-111	Eng. Drawing	0	6	3	ME-112	Eng. Drawing	0	6	3
H-110	Gen. Psychology	2	0	2	H-120	Governmen'	2	0	2
					P-102	Physics	3	2	4
		13	8	17			16	10	21

SOPHOMORE YEAR

	First Semester					*Second Semester*			
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-201	Calculus	3	0	3	M-202	Calculus	3	0	3
ME-211	Descriptive Geometry	2	3	3	ME-214	Mechanics (Statics)	3	0	3
ME-217	Metallurgy	2	0	2	EE-201	Elec. & Magnetic Cir.	4	0	4
H-230	Economics	2	0	2	H-231	Economics	2	0	2
ME-101	Machine Shop Proc.	1	2	2					
		13	7	16			15	2	16

JUNIOR YEAR

	First Semester					*Second Semester*			
ME-320	Thermodynamics	3	2	4	ME-321	Thermodynamics	3	2	4
ME-310	Dynamics	3	0	3	ME-313	Strength of Mats.	3	2	4
M-301	Diff. Equations & Vector Analysis	3	0	3	EE-306	Elec. Measurements	1	2	2
EE-302	Electric & Magnetic Fields	3	0	3	EE-307	Elec. Mach. I	3	2	4
EE-303	Alternating Current Theory	3	2	4	EE-304	Fund. of Electronics	3	2	4
H-340	Sociology	2	0	2		Elective	2	0	2
		17	4	19			15	10	20

SENIOR YEAR

	First Semester					*Second Semester*			
ME-125	Fluid Mechanics	3	0	3	EE-409	Elec. Con. Systems	3	2	4
EE-408	Elec. Mach. II	3	2	4	EE-411	Elec. Engr. Applic.	2	2	3
EE-404	Eng. Electronics I	3	2	4	EE-417	Elec. Transients	3	0	3
EE-410	Elec. Power Trans.	2	0	2	EE-405	Eng. Electronics II	3	2	4
EE-412	Elec. Engr. Seminar	1	0	1	E-402	Public Speaking	2	0	2
E-401	Report Writing	2	0	2		Elective	2	0	2
H-412	Applied Psychology	3	0	3					
		17	4	19			15	6	18

Engineering Drawing Laboratory

Mechanical Engineering Laboratory

MECHANICAL ENGINEERING

Mechanical Engineering extends into practically all branches of manufacturing and processing industries, as well as power generation, transportation, and plant construction.

In each industry there are several functions which the Mechanical Engineer may perform; that is, he may be assigned to general research, or to testing of materials or the testing of machine elements. He may be employed in the design of machinery relative to the development of manufacturing processes and plants. The Mechanical Engineer may also be engaged in the construction of machinery and in the production of goods. He may become involved in the plant efficiency or in the problems of management, or he may be attracted to the excellent opportunities in sales engineering. In most cases, placement in these fields lead to important executive posts.

The training which this Institute provides with respect to Mechanical Engineering comprises a basic study of the scientific and mathematical subjects; this includes those subjects fundamental to an engineering program, such as electronics, metallurgy, hydraulics, and electrical engineering.

The department of mechanical engineering offers exceptional opportunities for training in the fundamentals of machine design. A laboratory program including design, machine shop, and engineering laboratory experiments, provides association with the practical application of engineering operations.

Technical Report writing, industrial phychology, and labor relations complete the program of preparing the graduate for the engineering profession.

BACHELOR OF SCIENCE

MAJOR—MECHANICAL ENGINEERING

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math	5	0	5	M-102	College Math	5	0	5
Ch-101	General Chemistry	3	2	4	Ch-102	General Chemistry	3	2	4
E-101	English Composition	3	0	3	E-102	English Composition	3	0	3
ME-111	Engineering Drawing	0	6	3	ME-112	Engineering Drawing	0	6	3
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
					P-102	Physics	3	2	4
		13	8	17			16	10	21

SOPHOMORE YEAR

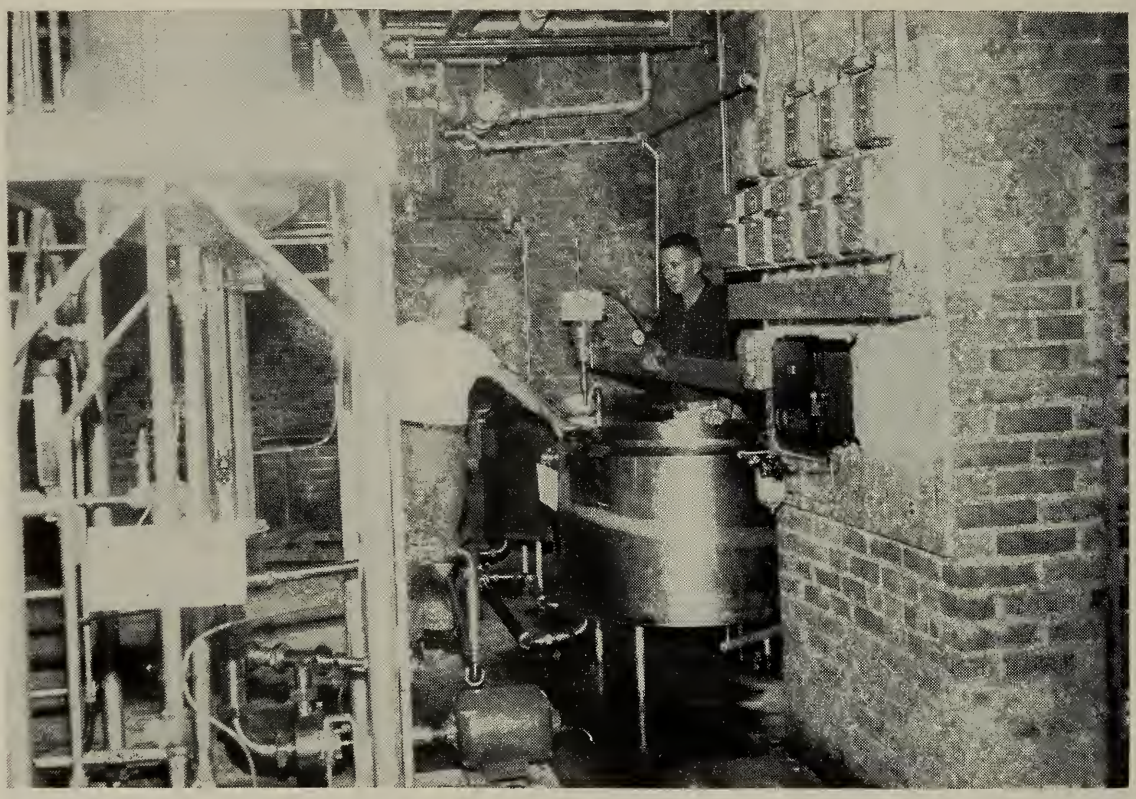
	First Semester					*Second Semester*			
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-201	Diff. Calculus	3	0	3	M-202	Integral Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
ME-217	Metallurgy	2	0	2	ME-210	Engineering Drawing	0	4	2
TE-285	Microscopy	0	2	1	ME-218	Metallography	2	2	3
ME-211	Descriptive Geometry	2	3	3	ME-214	Mechanics (Statics)	3	0	3
ME-101	Mfg. Processes	2	4	4	ME-212	Mfg. Processes	2	3	3
		14	11	19			15	11	20

JUNIOR YEAR

	First Semester					*Second Semester*			
ME-320	Thermodynamics	3	2	4	ME-321	Thermodynamics	3	2	4
ME-310	Mechanics (Dynamics)	3	0	3	ME-316	Mechanisms	2	3	3
ME-314	Str. of Materials	3	2	4	ME-315	Str. of Materials	3	2	4
M-306	Differential Equations	3	0	3	H-340	Sociology	2	0	2
EE-315	Electric Circuits	3	2	4	EE-316	Electrical Machinery	3	2	4
ME-22	Tool Inspection	1	3	2					
		16	9	20			13	9	17

SENIOR YEAR

	First Semester					*Second Semester*			
ME-421	Design of Mach. Elem.	3	0	3	ME-422	Design of Mach. Elem.	3	0	3
ME-423	Machine Design	0	6	3	ME-424	Machine Design	0	6	3
ME-419	Tool Engineering	0	6	3	ME-420	Tool Engineering	0	4	2
EE-419	Industrial Electronics	3	2	4	EE-420	Industrial Electronics	3	2	4
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
ME-425	Fluid Mechanics	3	0	3	ME-426	Mech. Engineer. Lab.	0	3	2
					H-411	Industrial Psychology	3	0	3
		11	14	18			11	15	19



Chemical Engineering Laboratory

Physical Chemistry

DEPARTMENT OF CHEMISTRY

BACHELOR OF SCIENCE

Major—Chemistry

The Department of Chemistry offers a specialized curriculum leading to the degree of Bachelor of Science in Chemistry. The curriculum is designed to give a sound basic training in the fields of inorganic, organic, analytical and physical chemistry. Courses in mathematics, physics, languages, economics, sociology and technical writing yield a well rounded program which prepares the student for industrial professions or for graduate training.

Approved Electives

Ch-382	History of Chemistry		2	0	2
Ch-393	Biochemistry	(2 semesters)	2	3	3
Ch-401	Colloid Chemistry		2	3	3
Ch-481	Chemistry of Food and Nutrition		2	3	3
Ch-491	Industrial Chemistry		3	0	3
H-120	Government		2	0	2
H-413	Psychology of Adjustment		2	0	2
H-414	Social Psychology		2	0	2
H-421	U. S. History		2	0	2
H-441	Social Problems		2	0	2
M-306	Differential Equations		3	0	3
M-407	Statistics		3	0	3

BACHELOR OF SCIENCE IN CHEMISTRY

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math I	4	0	4	M-201	College Math II	4	0	4
Ch-111	Inorganic Chemistry	3	3	4	Ch-112	Inorganic Chem. II	3	0	3
E-101	English Comp. I	3	0	3	Ch-113	Qual. Analysis	2	4	4
Me-121	Eng. Drawing	0	4	2	E-102	English Comp. II	3	0	3
H-110	Gen. Psychology	2	0	2	P-204	Physics II	4	2	5
P-203	Physics I	4	2	5	Me-122	Eng. Drawing	0	4	2
		16	9	20			16	10	21

SOPHOMORE YEAR

	First Semester					*Second Semester*			
Ch-211	Quant. Analysis	2	4	4	Ch-212	Quant. Analysis	2	4	4
Ch-231	Organic Chemistry	3	4	5	Ch-232	Organic Chemistry	3	4	5
M-203	Calculus	3	0	3	M-204	Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
P-205	Physics III	4	2	5	P-206	Physics IV	4	2	5
H-201	Elementary German	2	0	2	H-202	Elementary German	2	0	2
		16	10	21			16	10	21

JUNIOR YEAR

	First Semester					*Second Semester*			
Ch-411	Physical Chemistry	3	3	4	Ch-412	Physical Chemistry	3	3	4
Ch-311	Instrumental Analysis	2	4	4	Ch-312	Instrumental Analysis	2	4	4
Ch-332	Adv. Organic Chem.	2	4	4	H-340	Sociology	2	0	2
H-301	Intermediate German	2	0	2	H-461	Sci. German	2	0	2
Ch-360	Chem. Literature	2	0	2	Ch-351	Bacteriology	2	6	5
Te-481	Microscopy	0	4	2		Electives	—	—	3
Me-317	Metallurgy	2	0	2					
		13	15	20			11	13	20

SENIOR YEAR

	First Semester					*Second Semester*			
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
Ch-461	Organic Qual.	2	4	4	Ch-462	Organic Quant.	2	4	4
Ch-471	Thesis	0	6	3	Ch-472	Thesis	0	6	3
Ch-441	Ind. Chem. Analysis	2	4	4	Ch-442	Ind. Chem. Analysis	2	4	4
H-450	Labor Relations	2	0	2	H-411	Ind. Psych.	2	0	2
	Electives	—	—	3		Electives	—	—	3
		8	14	18			8	14	18

DEPARTMENT OF CHEMISTRY

BACHELOR OF SCIENCE

MAJOR —TEXTILE CHEMISTRY

Through a well-balanced program of training in the fundamental sciences and the humanities, together with the practical application of the principles involved, this department trains students for careers in the chemical industries, particularly in the field of textile chemistry, dyeing and finishing.

The curriculum provides a sound fundamental training in the fields of inorganic, organic, analytical and textile chemistry. Courses in mathematics, physics, history, economics, sociology, merchandising and technical writing yield a well-rounded program which prepares the student for industrial professions or for graduate training.

BACHELOR OF SCIENCE

Major—Textile Chemistry

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
Ch-111	Inorganic Chemistry	3	6	6	Ch-112	Inorganic Chemistry	3	0	3
M-101	College Math. I	5	0	5	M-102	College Math. II	5	0	5
E-101	English Composition I	3	0	3	E-102	English Composition II	3	0	3
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
TE-166	Intro. Survey of Tex.	1	0	1	TE-181	Fiber Technology	1	0	1
					Ch-114	Stoichiometry	2	0	2
					Ch-113	Qualitative Analysis	2	4	4
		14	10	19			18	8	22

SOPHOMORE YEAR

	First Semester					*Second Semester*			
Ch-211	Quantitative Anal. I	2	4	4	Ch-212	Qualitative Analysis	2	4	4
Ch-221	Textile Chemistry	2	4	4	Ch-222	Dyeing	2	4	4
Ch-231	Organic Chemistry	2	4	4	Ch-232	Organic Chemistry II	2	4	4
P-211	Physics	3	2	4	P-212	Physics	3	2	4
M-201	Differential Calculus	3	0	3	M-202	Integral Calculus	3	0	3
H-230	Economcis	2	0	2	H-231	Economcis	2	0	2
TE-269	Fabric Classification	1	0	1	TE-270	Fabric Classification	1	0	1
		15	14	22			15	14	22

JUNIOR YEAR

	First Semester					*Second Semester*			
Ch-311	Instrumental Anal. I	2	4	4	Ch-312	Instrumental Anal. II	2	4	4
Ch-331	Adv. Organic Chem.	2	6	5	Ch-321	Adv. Dyeing I	1	6	4
Ch-341	Textile Printing I	2	4	4	Ch-342	Textile Printing II	2	4	4
H-340	Sociology	2	0	2	Ch-352	Microbiology	2	4	4
TE-103	Cotton Manufacturing	1	0	1	TE-265	Color	1	0	1
TE-241	Knitting	1	0	1	TE-418	Microscopy	1	2	2
Ch-351	Bacteriology	2	4	4					
TE-383	Testing	1	2	2					
		13	20	23			9	20	19

SENIOR YEAR

	First Semester					*Second Semester*			
Ch-411	Physical Chem. I	3	3	4	Ch-412	Physical Chem. II	3	3	4
Ch-421	Adv. Dyeing	1	3	2	Ch-431	Chem. of Text. Fibers	3	2	4
Ch-441	Indus. Chem. Anal. I	1	6	4	Ch-442	Indus. Chem. Anal. II	1	6	4
Ch-451	Textile Finishing	1	6	4	Ch-452	Textile Finishing II	1	6	4
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
H-412	Applied Psychology	3	0	3					
		11	18	19			10	17	18

CHEMISTRY, DYEING AND FINISHING COURSE

Diploma—3 Years

FIRST YEAR

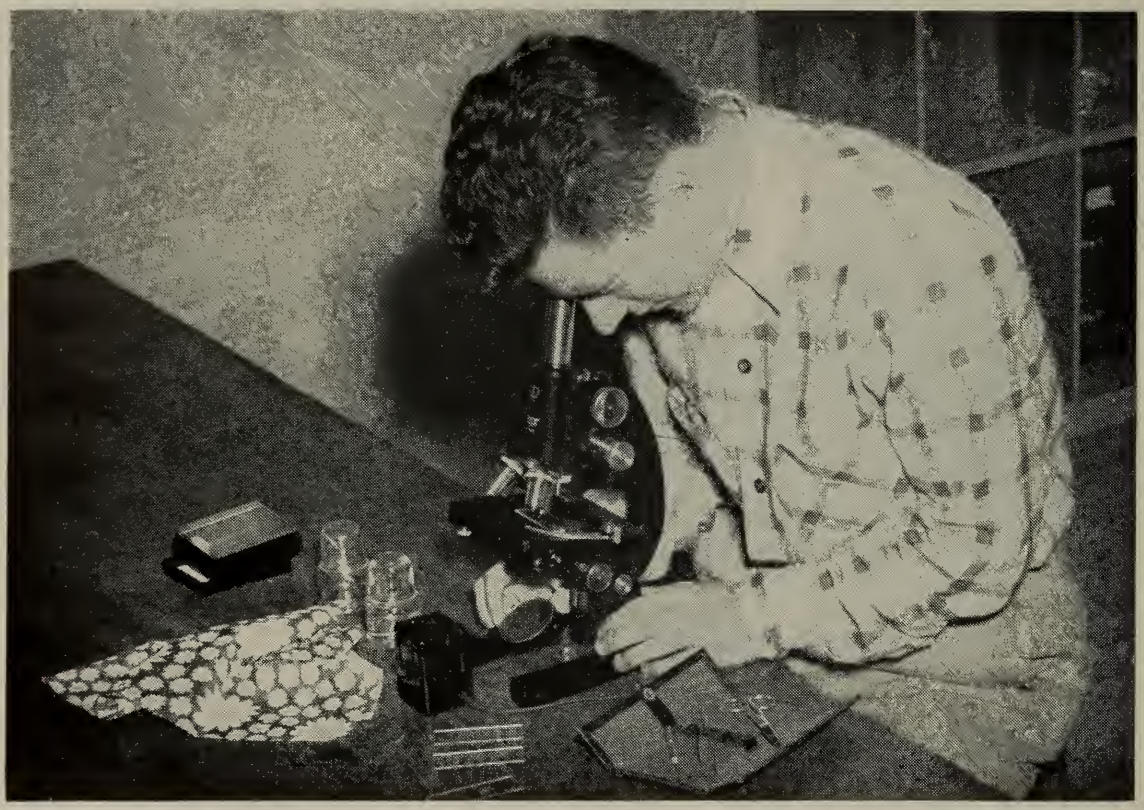
No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math. I	5	0	5	M-102	College Math. II	5	0	5
Ch-101	College Chemistry I	3	2	4	Ch-102	College Chemistry	3	2	4
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
TE-165	Intro. Textiles	2	0	2	TE-165	Intro. Textiles	1	0	1
E-101	English Composition	3	0	3	TE-181	Fiber Technology	1	0	1
					E-102	English Composition	3	0	3
		13	6	16			13	6	16

SECOND YEAR

	First Semester					*Second Semester*			
Ch-111	Inorganic Chemistry	3	6	6	Ch-112	Inorganic Chemistry	3	0	3
Ch-231	Organic Chemistry	2	4	4	Ch-232	Organic Chemistry	2	4	4
Ch-211	Quantitative Anal. I	2	4	4	Ch-212	Quantitative Anal. II	2	4	4
Ch-221	Textile Chemistry	2	4	4	Ch-222	Dyeing	2	4	4
TE-219	Fabric Classification	1	0	1	TE-220	Fabric Classification	1	0	1
		10	18	19			10	12	16

THIRD YEAR

	First Semester					*Second Semester*			
Ch-331	Adv. Organic Chem.	2	6	5	Ch-321	Advanced Dyeing I	1	6	4
Ch-341	Textile Printing I	2	4	4	Ch-342	Textile Printing II	2	4	4
Ch-451	Textile Finishing	1	6	4	Ch-452	Textile Finishing	1	6	4
Ch-441	Indus. Chem. Analysis	1	6	4	Ch-442	Indus. Chem. Analysis	1	6	4
E-401	Report Writing	2	0	2	TE-265	Color	1	0	1
					E-402	Public Speaking	2	0	2
		8	22	19			8	22	19



Microscopy

Yarn Preparation Laboratory

BACHELOR OF SCIENCE

Major—Textile Engineering—Textile Technology

These courses of study are designed to equip the student with the technical and practical background necessary for a graduate who is to enter one of the various fields of textile manufacturing, i.e., that is, yarn and fabric development and production, converting, selling, testing, research, etc.

Many years of experience in the field of textile education have resulted in a systematically arranged course of study. In order that the student will thoroughly understand and intelligently apply the principles involved in modern manufacture of fabrics from both natural and man-made fibers, he will, in the first two years, pursue these courses of study which are basic to all engineering, i.e., mathematics, chemistry, physics, engineering drawing, English composition, etc. In the interim he is gradually introduced to the more elementary phases of fabric construction.

He is thoroughly instructed in both the theoretical and practical phases of opening, carding, drawing, spinning and fabrication. This work begins with elementary stages in the first year and continues through four years to the most advanced stages. Designing and cloth analysis are introduced during the second year and the scope is gradually broadened through the third and fourth years. The blending of natural and man-made fibers of cotton, wool, worsted, rayons, etc., is considered. During the fourth year the student studies the processing of rayons, nylon, dacron, and all other continuous filament yarns.

The student must complete other courses of study necessary for one who would compete successfully in the textile field. Among these are thorough courses in textile dyeing, merchandising, economics, applied electricity, machine tool laboratory practice and modern industrial plant construction, as well as various social science studies.

Graduates of the Textile Technology program are recognized by industry as textile engineers and they are trained for ultimate management and executive level positions. The Textile Engineering program offers a broader basic engineering foundation for the student. The Knitting Option in Textile Technology is specifically designed for a career in the field of textile fabrication by the knitting process, rather than by the process of weaving.

BACHELOR OF SCIENCE

Major —Textile Engineering

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chemistry	3	2	4	Ch-102	College Chemistry	3	2	4
E-101	English Composition	3	0	3	E-102	English Composition	3	0	3
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
ME-101	Mach. Shop Processes	1	2	2	TE-165	Introductory Textiles	1	0	1
TE-165	Introductory Textiles	2	0	2	P-102	Physics	3	2	4
		16	8	20			17	6	21

SOPHOMORE YEAR

	First Semester					*Second Semester*			
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-203	Differential Calculus	3	0	3	M-204	Integral Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
Ch-201	Dyeing & Printing	2	3	3	ME-214	Mechanics (Statics)	3	0	3
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation I	1	2	2	TE-162	Weave Formation I	1	2	2
TE-163	Fabric Analysis I	1	2	2	TE-164	Fabric Analysis I	1	2	2
		16	13	22			17	10	22

JUNIOR YEAR

	First Semester					*Second Semester*			
EE-313	Elec. Circuits & Mach.	3	0	3	EE-314	Elec. Circuits & Mach.	3	0	3
ME-320	Thermodynamics	3	0	3	ME-321	Thermodynamics	3	0	3
ME-310	Mechanics (Dynamics)	3	0	3	M-212	Statistics	3	0	3
ME-309	Engineering Drawing	0	3	1	ME-316	Mechanisms	2	3	3
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-221	Weaving	2	3	2	TE-222	Weaving	2	3	2
TE-203	Cotton Classing	1	0	1	H-340	Sociology	2	0	2
TE-266	Fabric Analysis II	1	2	1	TE-265	Theory of Color	1	0	1
TE-261	Weave Formation II	1	2	2					
		17	14	21			19	11	22

SENIOR YEAR

	First Semester					*Second Semester*			
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
Ch-401	Textile Finishing	2	0	2	H-411	Industrial Psychology	3	0	3
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
TE-301	Yarn Manufacture	2	2	3	TE-303	Applied Research	0	3	2
TE-321	Weaving	1	4	3	TE-322	Weaving	1	4	3
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
Ch-402	Mfg. of Syn. Fibers	2	0	2	TE-323	Synthetic Process.	1	1	1
ME-314	Strength of Materials	3	0	3	ME-315	Strength of Materials	3	0	3
TE-241	Knitting, General	1	1	1	TE-242	Knitting, General	0	2	1
					ME-427	Mill Engineering	1	2	2
		15	11	20			13	16	21

BACHELOR OF SCIENCE

Major —Textile Technology

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Cl. Hours	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chemistry	3	2	4	Ch-102	College Chemistry	3	2	4
E-101	English Composition	3	0	3	E-102	English Composition	3	0	3
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
ME-101	Mach. Shop Process	1	2	2	TE-165	Intro. Textiles	1	0	2
TE-165	Intro. Textiles	2	0	2					
		16	8	20			14	6	17

SOPHOMORE YEAR

	First Semester					*Second Semester*			
P-211	Physics	3	2	4	P-212	Physics	3	2	4
M-211	Business Math	2	0	2	H-231	Economics	2	0	2
H-205	Economics	2	0	2	TE-120	Yarn Manufacture	2	2	3
Ch-201	Dyeing & Printing	2	3	3	TE-124	Weaving	2	2	3
TE-101	Yarn Manufacture	2	2	3	TE-122	Warp Preparation	1	0	1
TE-123	Weaving	1	2	2	TE-162	Weave Formation I	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-164	Fabric Anaysis I	1	2	2
TE-161	Weave Formation I	1	2	2	M-212	Statistics	3	0	3
TE-163	Fabric Anaysis I	1	2	2					
		15	13	21			15	10	20

JUNIOR YEAR

	First Semester					*Second Semester*			
EE-313	Elec. Circuits & Mach.	3	0	3	EE-314	Elec. Circuits & Mach.	3	0	3
ME-309	Engineering Drawing	0	3	1	TE-265	Theory of Color	1	0	1
TE-201	Yarn Manufacture	2	2	3	H-340	Sociology	2	0	2
TE-221	Weaving	2	3	3	TE-202	Yarn Manufacture	2	3	3
TE-261	Weave Formation II	1	2	2	TE-222	Weaving	2	3	3
TE-263	Fabric Analysis II	1	2	2	TE-262	Weave Formation II	1	2	2
TE-381	Physical Testing	1	2	2	TE-264	Fabric Analysis II	1	2	2
TE-122	Warp Preparation	1	0	1	TE-382	Physical Testing	1	2	2
TE-203	Cotton Classing	1	0	1					
		12	14	18			13	12	18

SENIOR YEAR

	First Semester					*Second Semester*			
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
TE-481	Microscopy	1	2	2	H-411	Industrial Psychology	3	0	3
Ch-401	Textile Finishing	2	0	2	TE-482	Microscopy	1	2	2
TE-301/2	Yarn Manufacture	2	2	3	ME-427	Mill Engineering	1	2	2
TE-321	Weaving	1	4	3	TE-303	Applied Research	0	3	2
TE-361	Jacquard Design	1	2	2	TE-322	Weaving	1	4	3
TE-363	Fabric Analysis III	0	2	1	TE-362	Jacquard Design	1	2	2
Ch-402	Mfg. Syn. Fibers	2	0	2	TE-364	Fabric Analysis III	0	2	1
TE-241	Knitting	1	2	2	TE-323	Synthetic Process.	1	1	1
					TE-242	Knitting	1	1	1
		12	14	19			11	17	19

BACHELOR OF SCIENCE

Major—Textile Technology, Knitting Option

FRESHMAN YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chemistry	3	2	4	Ch-102	College Chemistry	3	2	4
E-101	English Comp.	3	0	3	E-101	English Comp.	3	0	3
H-110	Gen. Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Eng. Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Machine Shop Proc.	1	2	2	TE-165	Intro. Textiles	1	0	1
TE-165	Intro. Textiles	2	0	2					
		16	8	20			14	6	17

SOPHOMORE YEAR

	First Semester					*Second Semester*			
P-211	Physics	3	2	4	P-212	Physics	3	2	4
M-205	Business Math	2	0	2	H-231	Economics	2	0	2
H-230	Yarn Manufacture	2	2	3	M-212	Statistics	3	0	3
TE-101	Economics	2	0	2	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	2	2	3
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation I	1	2	2	TE-162	Weave Formation I	1	2	2
TE-163	Fabric Analysis I	1	2	2	TE-164	Fabric Analysis I	1	1	2
Ch-201	Dyeing & Printing	2	3	3					
		15	13	21			15	9	20

JUNIOR YEAR

	First Semester					*Second Semester*			
EE-313	Elec. Circuits & Mach.	3	0	3	EE-314	Elec. Circuits & Mach.	3	0	3
TE-122	Warp Preparation	1	0	1	TE-265	Theory of Color	1	0	1
ME-309	Eng. Drawing	0	3	1	H-340	Sociology	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-241	Gen. Knitting	1	3	2	TE-242	Gen. Knitting	0	2	1
TE-243	Knit Fabric Analysis	1	3	2	TE-244	Knit Fabric Analysis	1	1	2
TE-245	Flat Knitting	1	2	2	TE-246	Warp Knitting	1	2	2
TE-381	Physical Testing	1	2	2	TE-247	Needle Technology	1	2	2
TE-203	Cotton Classing	1	0	1	TE-382	Physical Testing	1	2	2
		11	15	17			12	12	18

SENIOR YEAR

	First Semester					*Second Semester*			
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
TE-481	Microscopy	1	2	2	TE-481	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	H-411	Industrial Psychology	3	0	3
TE-301/2	Yarn Manufacture	2	2	3	TE-349	Mill Engineering	1	2	2
TE-343	Knit Fabric Analysis	1	2	2	TE-303	Applied Research	0	3	2
TE-344	Gen. Knitting	1	2	2	TE-347	Supplementary Mach.	1	1	1
TE-341	Warp Knitting	2	2	3	TE-342	Flat Knitting	2	4	4
TE-345	Motion & Timing	2	1	2	TE-348	Sewing Mach. & Maint.	1	1	1
Ch-402	Mfg. of Syn. Fibers	2	0	2	TE-346	Braiding Proc.	1	1	1
					TE-323	Synthetic Proc.	1	1	1
		15	11	20			13	15	19

GENERAL TEXTILE MANUFACTURING COURSE

Diploma—3 Years

FIRST YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
Ch-101	College Chemistry	3	2	4	Ch-102	College Chemistry	3	2	4
ME-121	Eng. Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Mach. Shop Proc.	1	2	2	ME-102	Mach. Shop Proc.	1	2	2
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	2	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation I	1	2	2	TE-162	Weave Formation I	1	2	2
TE-163	Fabric Analysis I	1	2	2	TE-164	Fabric Analysis I	1	2	2
		10	16	18			11	16	18

SECOND YEAR

	First Semester					*Second Semester*			
H-230	Economics	2	0	2	H-231	Economics	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-221	Weaving	2	3	3	TE-222	Weaving	2	3	3
TE-261	Weave Formation II	1	2	2	TE-262	Weave Formation II	1	2	2
TE-263	Fabric Analysis II	1	2	2	TE-264	Fabric Analysis II	1	2	2
TE-241	Knitting	1	2	2	TE-242	Knitting	1	1	1
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
Ch-201	Dyeing & Printing	2	3	3	TE-265	Theory of Color	1	0	1
TE-122	Warp Preparation	1	0	1					
TE-203	Cotton Classing	1	0	1					
		14	16	21			11	13	16

THIRD YEAR

	First Semester					*Second Semester*			
EE-313	Elec. Circuits & Mach.	3	0	3	EE-314	Elec. Circuits & Mach.	3	0	3
TE-301/2	Yarn Manufacture	2	2	3	TE-303	Applied Research	0	3	2
TE-321	Weaving	1	4	3	TE-322	Weaving	1	4	3
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
TE-363	Fabric Analysis III	0	2	1	TE-364	Fabric Analysis III	0	2	1
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	H-411	Industrial Psychology	3	0	3
Ch-402	Mfg. of Syn. Fibers	2	0	2	TE-323	Synthetics Proc.	1	1	1
ME-309	Eng. Drawing	0	3	1	ME-427	Mill Engineering	1	2	2
		12	15	19			11	16	19

KNIT GOODS MANUFACTURING COURSE

Diploma—3 Years

FIRST YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
Ch-101	Chemistry	3	2	4	Ch-102	Chemistry	3	2	4
ME-121	Eng. Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Mach. Shop Proc.	1	2	2	ME-102	Mach. Shop Proc.	1	2	2
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	2	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation I	1	2	2	TE-162	Weave Formation I	1	2	2
TE-163	Fabric Analysis I	1	2	2	TE-164	Fabric Analysis I	1	2	2
		10	16	18			11	16	18

SECOND YEAR

	First Semester					*Second Semester*			
H-230	Economics	2	0	2	H-231	Economics	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
Ch-201	Dyeing & Printing	2	3	3	TE-265	Theory of Color	1	0	1
TE-203	Cotton Classing	1	0	1	TE-242	Gen. Knitting	0	2	1
TE-241	Gen. Knitting	1	3	2	TE-244	Knit Fabric Analysis	1	1	2
TE-243	Knit Fabric Analysis	1	2	2	TE-246	Warp Knitting	1	2	2
TE-245	Flat Knitting	1	2	2	TE-247	Needle Technology	1	2	2
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
		11	14	17			9	12	15

THIRD YEAR

	First Semester					*Second Semester*			
EE-313	Elec. Circuits & Mach.	3	0	3	EE-314	Elec. Circuits & Mach.	3	0	3
TE-301/2	Yarn Manufacture	2	2	3	TE-303	Applied Research	0	3	2
ME-309	Eng. Drawing	0	3	1	TE-349	Mill Engineering	1	2	2
Ch-401	Textile Finishing	2	0	2	H-411	Industrial Psychology	3	0	3
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
TE-343	Knit Fabric Analysis	1	2	2	TE-347	Supplementary Mach.	1	1	1
TE-344	Gen. Knitting	1	2	2	TE-342	Flat Knitting	2	4	4
TE-341	Warp Knitting	2	2	3	TE-348	Sewing Mach. Maint.	1	1	1
TE-345	Motion & Timing	2	1	2	TE-346	Braiding Process	1	1	1
Ch-402	Mfg. of Syn. Fibers	2	0	2	TE-323	Syn. Processing	1	1	1
		16	14	22			14	15	20

TEXTILE TECHNICIAN COURSE

Certificate—2 Years

FIRST YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr.
	First Semester					*Second Semester*			
Ch-101	Chemistry	3	2	4	Ch-102	Chemistry	3	2	4
TE-182	Physical Testing	1	3	2	TE-183	Physical Testing	1	3	2
TE-184	Microscopy	1	2	2	TE-185	Microscopy	1	2	2
TE-161	Weave Formation I	1	2	2	TE-162	Weave Formation I	1	2	2
TE-163	Fabric Analysis I	1	2	2	TE-164	Fabric Analysis I	1	2	2
TE-167	Fabric Class.	2	0	2	TE-168	Fabric Class.	2	0	2
TE-103	Yarn Manufacture	1	1	1	TE-241	Knitting	1	2	2
TE-125	Weaving	1	1	1	TE-125	Weaving	1	1	1
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
					TE-265	Theory of Color	1	0	1
		12	13	17			13	14	19

SECOND YEAR

	First Semester					*Second Semester*			
TE-281	Physical Testing	2	4	4	TE-282	Physical Testing	2	4	4
TE-283	Microscopy	0	3	2	TE-284	Microscopy	0	3	2
TE-261	Weave Formation II	1	2	2	TE-262	Weave Formation II	1	2	2
TE-263	Fabric Analysis II	1	2	2	TE-264	Fabric Analysis II	1	2	2
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
TE-225	Weaving	1	1	1	TE-224	Weaving	1	2	2
Ch-201	Dyeing & Printing	2	3	3	Ch-205	Screen Printing	1	2	2
TE-203	Cotton Classing	1	0	1	Ch-202	Quantitative Anal.	2	4	4
TE-342	Knitting	0	2	1					
		9	19	18			9	21	20

SEWING MACHINE MAINTENANCE COURSE

Certificate—2 Years

FIRST YEAR

No.	Title	Hours Cl.	Lab.	Cr.	No.	Title	Hours Cl.	Lab.	Cr
	First Semester					*Second Semester*			
ME-101	Machine Shop	0	4	2	ME-102	Machine Shop	0	4	2
ME-101	Shop Theory	1	0	1	ME-102	Shop Theory	1	0	1
TE-250	Machine Class.	1	6	3	TE-251	Machine Class.	1	6	3
TE-253	Time Study—Cutting	2	4	3	TE-254	Time Study—Cutting	2	4	3
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
TE-255	Timing & Assembly	2	6	4	TE-256	Timing & Assembly	2	6	4
		6	25	15			6	25	15

SECOND YEAR

	First Semester					*Second Semester*			
H-230	Economics	2	0	2	H-231	Economics	2	0	2
ME-103	Mach. Shop Proc.	0	4	2	ME-104	Mach. Shop Proc.	0	4	2
ME-103	Shop Theory	2	0	2	ME-104	Shop Theory	2	0	2
TE-350	Timing & Assembly	1	6	4	TE-351	Timing & Assembly	1	6	4
TE-352	Maintenance	1	6	2	TE-353	Maintenance	1	6	2
TE-354	Time Study & Mfg.	2	6	3	TE-355	Time Study & Mfg.	2	6	3
		8	22	15			8	22	15

Textile Design and Fashion

BACHELOR OF SCIENCE

Major—Textile Design and Fashion

In keeping with the current scientific advancement in American textiles, and to fulfill the requirement relative to competent textile designers, the New Bedford Institute of Technology has added a new Department of Studies in Textile Design and Fashion.

Spectacular advancements in textile technology and engineering during the past decade point up a paramount need for a co-ordination of the special techniques of fabric and garment designers.

The styling, designing, and development of fabrics and textures now require an extensive technical knowledge on the part of those concerned with the artistic and functional elements of textile materials.

This course of study has foundation design, various painting, and art history as the principal subjects in the Freshman year. Other courses in the first year include lettering, fundamental textile subjects, General Psychology and English.

Courses in applied textile design, art history, drawing and painting, plus theory and practical studies of textile manufacturing, dyeing and finishing comprise the major part of the second, third and fourth years.

Courses in dress design, pattern drafting and fashion illustration are given in the Junior and Senior years. Academic subjects (required for a degree) are included throughout the curriculum.

Other than in the Freshman year, projects are required whereby the student creates and executes his own original designs, in both fabric and apparel.

BACHELOR OF SCIENCE

Major —Textile Design and Fashion

FRESHMAN YEAR

No.	Title	Hours Cl. & Lab.	Cr.	No.	Title	Hours Cl. & Lab.	Cr.
	First Semester				*Second Semester*		
TD-101	Nature Drawing	3	2	TD-102	Nature Drawing	3	2
TD-103	Life Drawing	3	1	TD-104	Life Drawing	3	1
TD-105	Drawing & Painting	3	1	TD-106	Drawing & Painting	3	1
TD-107	Design	8	4	TD-108	Design	8	4
TD-113	Lettering	2	2	TD-115	History of Art	2	2
TD-114	History of Art	2	2	TD-112	Anatomy	1	1
TD-111	Anatomy	1	1	E-102	English Composition	3	3
E-101	English Composition	3	3	H-120	Government	2	2
H-110	General Psychology	2	2	TE-169	Fabric Classification	1	1
TE-166	Introductory Textiles	1	1	ME-127	Theory of Projection	2	2
		28	19			28	19

SOPHOMORE YEAR

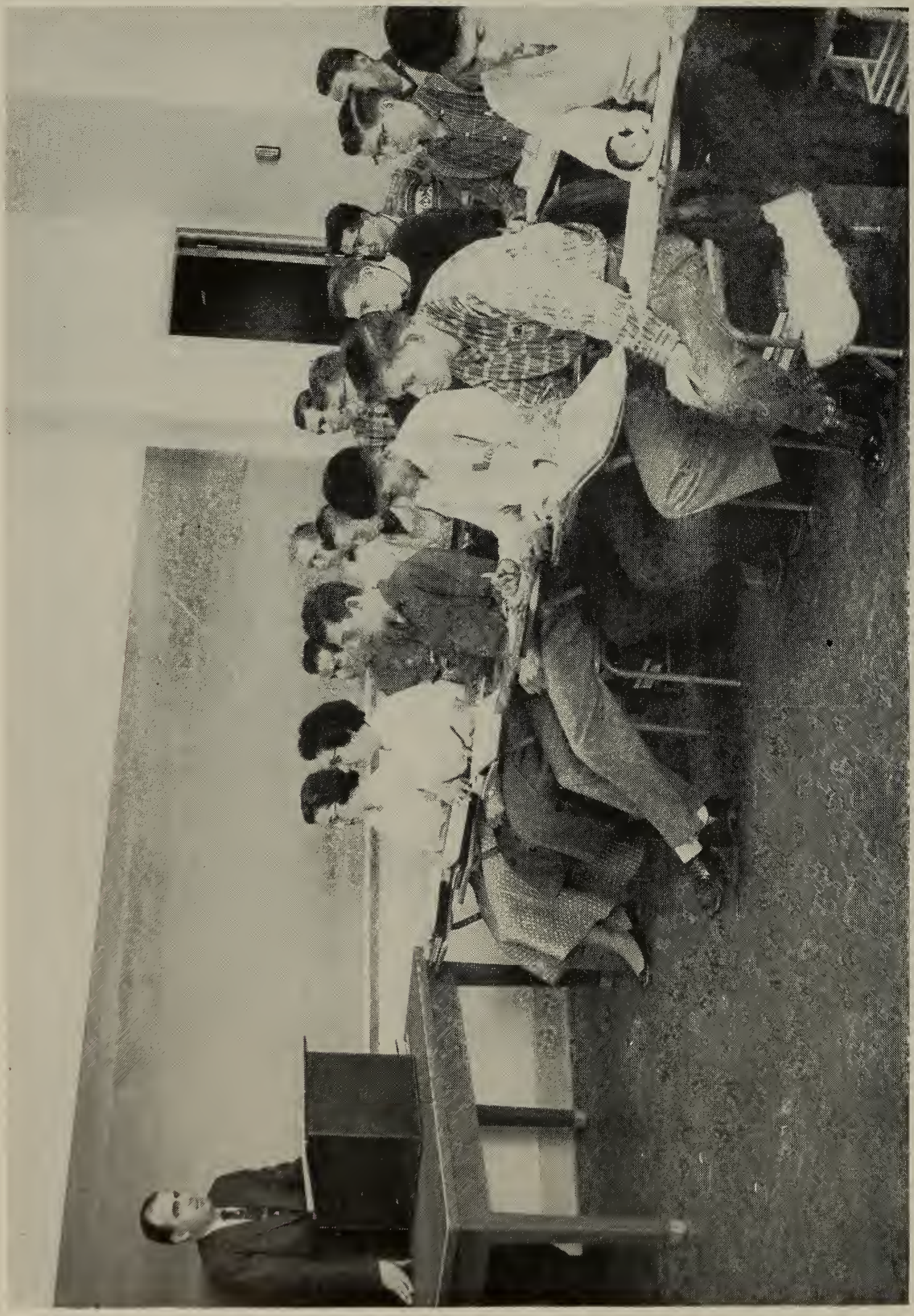
	First Semester				*Second Semester*		
TD-202	Life Drawing	3	1	TD-203	Life Drawing	3	1
TD-204	Drawing & Painting	3	1	TD-205	Drawing & Painting	3	1
TD-201	Nature Drawing	3	2	TD-210	Fashion Illustration	2	1
TD-206	History of Art	2	2	TD-207	History of Art	2	2
TD-208	Textile Design	4	3	TD-209	Text. Design & Screen Pr.	8	6
CH-203	Screen Printing	4	3	TE-162	Weave Formation	4	3
TE-161	Weave Formation	4	3	TE-164	Fabric Analysis	3	2
TE-163	Fabric Analysis	3	2	TE-225	Power Weaving	2	1
TE-103	Yarn Manufacture	1	1	H-231	Economics	2	2
H-230	Economics	2	2				
		29	20			29	19

JUNIOR YEAR

	First Semester				*Second Semester*		
TD-302	Text. Des. & Screen Pr.	8	6	TD-303	Text. Des. & Screen Pr.	8	6
TD-308	Handloom Weaving	4	2	TD-309	Handloom Weaving	4	2
TE-361	Jacquard Designing	3	2	TE-362	Jacquard Designing	3	2
TE-326	Power Weaving	2	1	TE-327	Power Weaving	2	1
TD-314	Fashion Model	2	1	TD-311	Fashion Illustration	3	2
TD-310	Fashion Illustration	3	2	TD-313	Fashion Design	4	3
TD-312	Fashion Fundamentals	4	3	TE-350	General Stitching	2	1
TD-315	History of Costume	2	2		Elective	0	2
H-340	Sociology	2	2				
		30	21			28	19

SENIOR YEAR

	First Semester				*Second Semester*		
TD-401	Textile Design	6	4	TD-402	Textile Design	8	6
TD-405	Fashion Illustration	4	2	TD-406	Fashion Illustration	4	2
TD-407	Fashion Design	4	3	TD-408	Fashion Design	4	3
TD-403	Handloom Weaving	2	1	TD-404	Handloom Weaving	2	1
E-401	Report Writing	2	2	E-402	Public Speaking	2	2
H-412	Applied Psych.	3	3	TD-409	Degree Project	6	3
TE-410	Knitting	2	1		Elective	0	2
TE-182	Textile Testing	2	1				
CH-403	Textile Finishing	2	2				
		27	19			26	19



Humanities Lecture

GRADUATE SCHOOL

Authority by Act of the General Court of the Commonwealth of Massachusetts allows New Bedford Institute of Technology to confer the degrees of Master of Science in Textile Engineering and Master of Science in Textile Chemistry.

The programs of graduate study offer advanced technological training for the students requiring a foundation for careers relative to the expansion of the application of scientific and engineering principles in the progress of the textile industry.

Admissions

Admission may be to full graduate standing only. No provisional or special students will be admitted to graduate courses.

To be admitted to full "Graduate Standing" an applicant must have a Bachelor of Science degree in an appropriate field from an institution of at least equal standing to that of the New Bedford Institute of Textiles and Technology.

An average grade of "B" or better in the undergraduate major will be required.

All graduate students must designate a major field, no unclassified students being admitted to graduate study.

Credits

1. All candidates for the masters degree will be required to complete 30 credit hours of work.
2. No more than 6 credits will be accepted from other institutions.
3. At least 10 credits must be obtained from courses designated as graduate courses.
4. All candidates for the Master of Science degree must prepare a thesis representing an original investigation. The thesis will represent 10 credits.
5. Ten credits will be allowed for courses relating to the particular area involved and must be approved by the head of the department of that field in which the degree will be granted.
6. At least 24 credits must be obtained through residence study.
7. No credit will be given for correspondence courses.
8. All graduate work must be completed within two calendar years. Normally one should be sufficient.

Requirements for Graduation

In order to be granted the Master of Science degree the candidate must have fulfilled the following requirements:

1. Satisfactorily completed the prescribed course of study leading to the degree in the field for which he has enrolled.
2. Have obtained a minimum of 30 credits; 20 credits obtained in the prescribed subjects, of which 14 are to be earned in the field of specialization and 6 in another related field.

3. Satisfactorily completed a thesis, covering original research, approved by the head of the department involved. (No mere compilation and/or collation of data shall be accepted as fulfillment of this requirement.) Said thesis shall account for not more than 10 credits of the above-mentioned 30 credits required.

4. Must have passed a comprehensive oral examination that is held to satisfy the examining committee that the candidate possesses a reasonable mastery of knowledge in the major and minor fields and that this knowledge can be used with promptness and accuracy. This examination may not be held until all other requirements except completing the course of work of the last semester are satisfied but must be taken not later than two weeks before the end of the semester in which the degree is to be awarded.

5. Have maintained a minimum rating of "B" in both the graduate and under-graduate subjects studied.

6. Have a minimum of one year of academic residence.

7. Have the approval of his graduate advisor in consultation with the department in which he is enrolled for all subjects studied.

8. In both of the curricula below the candidate may select certain under-graduate courses for graduate credit subject to the approval of his graduate advisor and the department in which he is enrolled. (In no case can he choose more than 6 credits.) Furthermore, he may be required to complete certain undergraduate requirements before proceeding with his graduate studies.

TEXTILE ENGINEERING CURRICULUM

Students successfully completing the graduate program leading to the Master of Science in Textile Engineering degree are qualified to undertake research, either of a fundamental or of a practical nature, relative to the utilization and/or evaluation of modern textile fibers and fabrics. They also have the necessary background to enable them to pursue with distinction advanced graduate studies.

The following is a list of courses acceptable for graduate credit:

Textile Marketing
Textile Costing
Industrial Management
Textile Microscopy (advanced)
Cotton Fiber Technology
Structure and Properties of Synthetic Fibers
The Manufacture and Processing of Synthetic Fibers
Cotton Yarn Processing (advanced)
Textile Manufacture Seminar
Creative Fabric Design
Technical Fabric Design (advanced)
Textile Photomicrography
Quality Control
Fiber and Fabric Testing

TEXTILE CHEMISTRY CURRICULUM

The Studies pursued by a succcessful candidate for the Master of Science in Textile Chemistry degree allow him to undertake research projects concerned with the chemistry of textile fibers and fabrics. Through an integrated study of the physical chemistry of dyeing and finishing processes, the manufacture and processing of synthetic fibers, seminars and original thesis research, he is well fitted to step out into industry and help advanced the progress being made today in the textile chemistry fields. He is also well capable of doing further study graduate study creditably.

The courses listed below are those from which a candidate is to arrange an acceptable program.

Physical Chemistry of Dyeing
Physical Chemistry of Surface Active Agents
Interpretation of Data
*Statistics
Colloid Science
Elementary Chemical Engineering
Manufacture and Processing of Synthetics
*Differential Equations
Survey of Current Textiles
Chemical Literature
*Report Writing
Chemical Thermodynamics
*Instrumental Analysis
Textile Chemistry Seminar
Textile Microscopy (advanced)
Textile Photomicrography

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* Already in undergraduate curricula.

THE EVENING SCHOOL

Organization and Purpose

The Evening School is an integrated administrative unit of the New Bedford Institute of Technology. It is oriented to the need for supplying competently trained personnel to the professions and industries which the Institute serves. In addition, courses are offered to meet a growing need for the continuing education for the adult community.

Entrance Requirements

Entrance requirements vary with the subject selected. Subjects taken for college credit, the requirement is graduation from a recognized high school. Applicants for credit in any course are required to present qualifying records. For all other programs, the only requirement, in general, is graduation from grammar school and the necessary professional or industrial experience.

Registration

Registration forms may be procured in advance at the office of the Registrar. Registration is normally held during the second week of September for the Fall term and during the second week in December for the Spring term. No new registrations will be accepted after the first two weeks of classes have been held except with permission of the Director of Evening School and the Instructor concerned. Students cannot apply for a transfer to a college credit program after the first two weeks of classes.

Tuition and Fees

Tuition and Fees charged for attendance at the Evening School are as follows:

1. Non-credit courses are available without tuition charge to residents of New Bedford. (This is in lieu of a $10,000 annual grant to the Institution from the city of New Bedford.)
2. Non-credit courses have a tuition charge of $10.00 per course to non-residents of New Bedford.
3. A $5.00 fee per credit hour is charged to all students enrolled in a credit course for college credit.
4. Tuition charges according to item 1 and 2 above are applied to students enrolled in a credit course but not seeking college credit.
5. A $2.00 laboratory fee is required of students enrolled in Chemistry and Machine Shop courses.
6. Refunds, for tuition only, will be made on the basic rate applicable to day students. An application for refund must be made by the student concerned; it is not the function of the Institute.

Attendance

Students must attend 70% of classes held and complete prescribed assignments in order to receive a certificate for the subject. Students in college-credit courses must be present for 80% of scheduled classes.

The academic year consists of two 12 week semesters in the Evening School. The first semester begins at the end of September and extends to

the middle of December. The second semester starts during the first week of January and is completed about the end of March.

The sessions per week and the semesters required to complete a subject are shown with each course. A session consists of 1½ hour period. In most courses, one session is given in one night, however, due to the nature of the course, in some cases two sessions (three hours) are completed in one night. Number of credits offered for courses are shown in listing of courses.

Grading System

The system as used in the day program will be adhered to.

COURSES OFFERED — NON CREDIT

TEXTILE DEPARTMENT

		Sessions Per Week	Semesters
Yarn Preparation Division:			
TE-101, 2	Picking, Carding, Drawing	2	2
TE-201A	Roving Frames	2	1
TE-201B	Spinning	2	1
TE-302	Combing	2	1
TE-203	Cotton Classing	1	1
TE-202	Advanced Calculations	2	1
TE-304	Time Study	1	2
Weaving Division:			
TE-501	Elementary Loom Fixing	2	1
TE-502	Draper Loom Fixing	2	1
TE-503	Automatic Box Loom Fixing	2	1
TE-504	Jacquard Loom Fixing	2	1
Knitting Division:			
TE-241, 2	General Knitting	2	2
TE-245	Flat Knitting	2	1
TE-246	Warp Knitting	2	1
TE-350, 1	Power Sewing	1	1
TE-352, 3	Sewing Machine Maintenance	2	1
Design Division:			
TE-161, 2	Weave Formation I	2	2
TE-261, 2	Weave Formation II	2	2
TE-163, 4	Fabric Analysis I	2	2
TE-263, 4	Fabric Analysis II	2	2
TE-361, 2	Jacquard Designing	2	2
TE-167, 8	Fabric Classification	1	2
TD-210	Fashion Illustration	2	1
TD-306	Screen Printing	1	1

		Sessions Per Week	Semesters
Testing and Microscopy Division:			
TE-182, 3	Physical Testing	2	1
TE-184, 5	Microscopy	2	1
TE-283, 4	Photomicroscopy	2	1

MECHANICAL ENGINEERING DEPARTMENT

ME-501, 2	Engineering Drawing	2	2
ME-503, 4	Advanced Engineering Drawing	2	2
ME-505, 6	Advanced Engineering Drawing	2	2
ME-507	Tool Design	2	2
ME-214	Mechanics (Statics)	2	1
ME-521	Elementary Strength of Materials	2	1
ME-522	Machine Design	2	1
ME-510	Machine Shop Practice	2	2
ME-511	Advanced Machine Shop Practice	2	2

Credit Courses

MATHEMATICS AND PHYSICS DEPARTMENT

		Sessions Per Week	Semesters	Crs.
M-010	Pre-college Mathematics			
M-101	College Mathematics I	3	1	5
M-102	College Mathematics II	3	1	5
M-111	Log Log Deci Trig Slide Rule			
M-110	Slide Rule Fundamentals			
M-203	Differential Calculus	2	1	3
M-204	Integral Calculus	2	1	3
M-407	Statistics	1	2	3
P-211	Physics	2	1	3
P-212	Physics	2	1	3

ELECTRICAL ENGINEERING DEPARTMENT

EE-313	Electric Circuits and Machines D.C.	2	1	3
EE-314	Electric Circuits and Machines A.C.	2	1	3
EE-315	Electric Circuit Fundamentals	2	1	3
EE-316	Electric Machinery	2	1	3
EE-303	Fundamentals of Electronics	2	1	3
EE-304	Engineering Electronics I	2	1	3
EE-405	Engineering Electronics II	2	1	3

SOCIAL SCIENCE AND HUMANITIES DEPARTMENT

H-110	General Psychology	1	2	3
H-413	Psychology of Adjustment	1	2	3
H-230	Economics	1	2	3
H-340	Sociology	1	2	3
H-120	Government	1	2	3

		Sessions Per Week	Semester	Semes-ter Crs.
H-411	Industrial Psychology	1	2	3
H-421	U. S. History	1	2	3
H-232	Introduction to Business	1	2	3
H-412	Applied Psychology	1	2	3
H-450	Labor Relations	1	2	3
H-461	College French	1	2	3
H-462	College German	1	2	3
H-433	Industrial Management	1	2	3
H-441	Social Problems	1	2	3
H-442	World History, since 1900	1	2	3
H-470	Philosophy	1	2	3
H-480	Public Relations	1	2	3
	ENGLISH DEPARTMENT			
E-101	College English I	2	1	3
E-102	College English II	2	1	3
E-401	Technical Report Writing	1	1	2
E-103	Business English	1	1	2
E-402	Public Speaking	1	1	2
	CHEMISTRY DEPARTMENT			
Ch-100	General Inorganic Chemistry	2	2	4
Ch-111	Inorganic Chemistry	2	2	4
Ch-112	Inorganic Chemistry II	2	2	4
Ch-113	Qualitative Analysis	2	2	4
Ch-211	Elem. Quantitative Analysis	2	2	4
Ch-212	Elem. Quantitative Analysis II	2	2	4
Ch-221	Introductory Textile Chemistry	2	2	4
Ch-231	Elementary Organic Chemistry	2	2	4
Ch-232	Elem. Organic Chemistry II	2	2	4
Ch-331	Advanced Organic Chemistry	2	2	4
Ch-222	Elementary Dyeing	2	2	4
Ch-341	Textile Printing I	2	2	4
Ch-342	Textile Printing II	2	2	4
Ch-321	Advanced Dyeing I	2	2	4
Ch-421	Advanced Dyeing II	2	2	4
Ch-114	Stoichiometry	2	2	4
Ch-311	Instrumental Analysis	2	2	4
Ch-312	Instrumental Analysis II	2	2	4
Ch-351	Bacteriology	2	2	4
Ch-352	Microbiology	2	2	4
Ch-411	Physical Chemistry	2	2	4
Ch-412	Physical Chemistry II	2	2	4
Ch-441	Industrial Chemical Analysis	2	2	4
Ch-442	Industrial Chemical Analysis II	2	2	4
Ch-451	Textile Finishing	2	2	4
Ch-452	Textile Finishing II	2	2	4

DEPARTMENT OF ELECTRICAL ENGINEERING

EE-201 Electric and Magnetic Circuits

A study of the basic concepts of electric and magnetic circuits and methods of electric network analysis. (4-0-4)
Prerequisites: M-201 and P-201

EE-302 Electric and Magnetic Fields

A mathematical treatment of the basic aspects of the theory of electric and magnetic fields. (3-0-3)
Prerequisites: M-202 and EE-201

EE-303 Alternating-Current Theory

This course covers the fundamentals of ac theory including sinusoidal functions, vector representation, complex quantities, series, parallel and combination circuts, network theorems, inductance and mutual inductance, polyphase circuits, power measurements, symmetrical components, non-sinusoidal quantities, and Fourier Series. Problem drills and laboratory accompany regular assignments. (3-2-4)
Prerequisites: M-202 and EE-201

EE-304 Fundamentals of Electronics

A basic study of the behavior of electron tubes and other circuit elements, including the analysis of basic vacuum tube circuits. (3-2-4)
Prerequisites: EE-303 and M-202

EE-306 Electrical Measurements

A study of mathematical methods of evaluation of experimental data and determination of experimental error, and a study of various instruments and measuring electrical circuits including application of potentiometers, ac bridges, and oscillographs. (1-2-2)
Prerequisite: EE-303

EE-307 Electric Machinery I

A course on the basic principles of electromechanical energy-conversion with emphasis on analysis of dc machine performance and applications. A study on the basic theory of transformers is also included. (3-2-4)
Prerequisite: EE-303

EE-313 Electric Circuits and Machines—DC

A course in the fundamentals, emphasizing principles rather than a detailed mathematical theory. Topics included in this course are dc circuits, magnetism and electromagnetism, dc generators, dc motors, and dc motor control. An introduction to vector representation of alternating values and their application to ac circuits. (3-0-3)
Prerequisites: M-102 and P-212

EE-314 Electric Circuits and Machines—AC

A continuation of EE-313. This course includes three-phase circuits, transformers, ac generators, induction motors, synchronous motors, and single-phase motors, and an introduction to control circuits and electronics. (3-0-3)
Prerequisite: EE-313

EE-315 Electric Circuits

A course for non-electrical engineering majors in the more important concepts of electrical circuits including magnetic concepts, use of vector representation in ac, polyphase systems, and an introduction to electronics. (3-0-3)
Prerequisites: M-202 and P-201

EE-316 Electric Machinery

A course for non-electrical engineering majors including the study of dc and ac rotating machinery, transformers, instruments, and control of motors. (3-2-4)
Prerequisite: EE-315

EE-404 Engineering Electronics I

Course includes study of the application of vacuum tubes to perform specific functions in communication systems. Modulation, amplification, and oscillation. Factors affecting frequency response, power output, and input and output impedances. (3-2-4)
Prerequisite: EE-304

EE-405 Engineering Electronics II

Theory and application of electron tubes in computing circuits, special electronic circuits, and electronic instrumentation. In addition, an introduction to solid-state electronics and transistors as circuit elements is included.
Prerequisite: EE-404

EE-408 Electric Machinery II

Continuation of EE-307 with emphasis on analysis of ac machine performance including synchronous machines, and induction machines, and metadynes. Also treated are the dynamics of electromechanically coupled systems. (3-2-4)
Prerequisite: EE-307

EE-409 Electric Control Systems

Control theory integrating previous study in circuits, machinery, and electronics is stressed. The course includes dynamic studies of motors and loads, electronic switching devices and circuits, power amplifiers, control circuits. (3-2-4)
Prerequisites: EE-408 and M-301

EE-410 Electric Power Transmission

A course including a study of mathematical methods used in the solution of transmission problems. Circle diagrams, symmetrical components, and load studies. (2-0-2)
Prerequisite: EE-408 (may be taken concurrently)

EE-411 Electrical Engineering Applications

A course designed to extend the student's knowledge through assigned problems in the electrical engineering field. (2-2-3)
Prerequisite: Open only to engineering seniors.

EE-412 Electrical Engineering Seminar

Student presentation of reports on topics assigned. Class discussion. (1-0-1)

Prerequisite: Open only to electrical engineering seniors.

EE-417 Electrical Transients

A mathematical treatment of electrical transients including discussion of RL, RC, and RLC circuits, vacuum tube circuits, with applied and alternating emf's; of non-sinusoidal applied emf's; and of repeated and discontinuous emf functions. Use of the Laplace transform is introduced. (3-0-3)

Prerequisite: M-301. Open only to electrical engineering seniors.

EE-418 Mathematical Methods in Electrical Engineering

Discussion of the mathematical methods applied to selected topics in the general electrical engineering field. (2-0-2)

Prerequisite: M-301. Open only to electrical engineering seniors.

EE-419 Industrial Electronics

A course for non-electrical engineering majors including study of the basic electron tubes and their behavior in basic electronic circuits—amplifiers, oscillators, detectors, and modulators. (3-2-4)

Prerequisite: EE-315

EE-420 Industrial Electronics

A continuation of EE-419. Study of circuits and electronic systems useful in the industrial field. Power conversion. Electronic relay circuits. Industrial electronic instrumentation. Electronic motor control and regulation. (3-2-4)

Prerequisite: EE-419

DEPARTMENT OF ENGINEERING

DIVISION OF MECHANICAL ENGINEERING

ME-101 Machine Shop Processes

A continuous course systematically arranged according to the course involved. Consists of a thorough study of the machinery used in the present day machine shop. Instruction is given in the use of the fundamental machine tools including the engine lathe, milling machine, cylindrical grinder, planer, shaper, and drill press. This course is supplemented by lectures in shop theory and classes in shop calculations.

ME-111 Engineering Drawing

The basic principles of engineering drawing including the use and care of drawing instruments, freehand lettering, theory of orthographic projection making of multi-view drawing, sectional views, and auxiliary views, dimensioning, fits and tolerances, screw fasteners, and technical sketching. (0-6-3)

ME-112 Engineering Drawing

A continuation of ME-111 covering the making of shop and assembly drawings of machine parts. (0-6-3)
Prerequisite: ME-111

ME-121 Engineering Drawing

For students in the Textile Engineering and Textile Chemistry courses similar to ME-111. (0-4-2)

ME-122 Engineering Drawing

A continuation of ME-121 above, and similar to ME-112.
Prerequisite: ME-121 (0-4-2)

ME-127 Theory of Projection

Since drawing is a graphic language that is universally used by engineers, designers, and illustrators to describe a size, a shape, or the layout of an object, this course has been developed to provide a basic understanding of the methods used to prepare such drawings.

The course includes orthographic, axonometric, oblique and perspective projection. (2-0-2)

ME-210 Engineering Drawing

Complete detail and assembly drawings of small machines with dimensions and tolerances, notes, and all information necessary for production drawings.

An advanced course in the drafting of such machine elements as spur gears, worm and bevel gears, bearing installations, and cams and linkages. (0-4-2)
Prerequisite: ME-112

ME-211 Descriptive Geometry

The principles of descriptive geometry as applied to the solution of problems engineering construction.

Consists of such topics as intersections of lines and planes, development of plan surfaces, single and warped curved surfaces, revolution, and concurrent force problems. (2-3-3)
Prerequisite: ME-112

ME-212 Manufacturing Processes

Continued instruction on the fundamental machine tool operations involving the lathe, planer, milling machine, grinder, and turret lathe. The application of jigs, fixtures, and special tools and attachments to mass production methods.

Lectures, demonstrations and laboratory exercises on heat treatment and machinability of carbon and alloy steels.

ME-214 Engineering Mechanics (Statics)

Composition and resolution of forces; the free body diagram; conditions of equilibrium; analytical and graphical solution of problems; friction; centroids and center of gravity; moment of inertia. (3-0-3)
Prerequisite: P-101

ME-217 Metallurgy

A lecture course on the various processes of working metals and separating them from the ores. (2-0-2)
Prerequisite: Ch-102

ME-218 Metallography

An elementary course that introduces the student to the effect that various alloying elements have on the structure and properties of metals, especially iron.

Starting with the construction of the iron-carbon diagram, the student learns to interpret and use the diagram and the phase rule in practice. The laboratory work combines actual metallographic microscopic examination of specimens of various simple alloys prepared by the student with class discussion of the meaning of the microphotos. (2-2-3)
Prerequisite: ME-317

ME-309 Engineering Drawing

A course arranged for the students of textile engineering consisting of a study of gears and cams as applied to textile machinery. (0-3-1)
Prerequisite: ME-122

ME-310 Engineering Mechanics (Dynamics)

The kinematics and kinetics of translation, rotation, and general plane motion; work; energy; power; impulse and momentum. (3-0-3)
Prerequisites: M-4, P-1

ME-313 Strength of Materials

An abridgement of M-314 for students in Electrical Engineering and Textile Engineering. (3-2-4)
Prerequisite: ME-214

ME-314 - ME-315 Strength of Materials

Elementary stresses and strains; stresses due to change of temperature; combined stresses; riveted joints; strength and deflection of beams; longi-

tudinal shear in beams; statically indeterminate beams; columns; reinforced concrete beams; strain energy and impact loading. (3-2-4) (3-2-4)
Prerequisite: ME-214

ME-316 Mechanism

A study of the operating principles of machine parts to determine displacement, velocity, and acceleration by analytical and graphical methods. Emphasis is upon linkages, gears, gear trains, cams, belts and pulleys, chain drives, variable speed drives, reciprocating mechanisms. (2-3-3)
Prerequisite: ME-210

ME-320 Applied Thermodynamics

A course presenting the fundamental concepts of thermodynamics for the engineering majors. The course includes a study of the First Law of Thermodynamics, the General Energy Equation, properties of the common working substances, the Second Law of Thermodynamics, analysis of cycles, and internal combustion engines. (3-2-4)
Prerequisites: M-4, P-101

ME-321 Applied Thermodynamics

A continuation of ME-320. The course includes a study of vapors, Mollier diagrams, vapor cycles, steam power plants, refrigeration, and heat transfer. (3-2-4)
Prerequisite: ME-320

ME-322 Tool Inspection

A careful study of the use and application of precision instruments as applied to tool inspection. Includes both lectures and laboratory exercises in the use of precision gages, size block, shadow graphs, hardness testers, sine bars, and other precision instruments (1-3-2)
Prerequisite: ME-213

ME-419 Tool Engineering I

A laboratory course designed to introduce the student to fundamental tooling problems of manufacturing engineering. Simple jigs & fixtures are designed and complete specification for making these tools are drawn up. Care is taken to closely relate the actual tool problem requirement to that of mass production in industry. (0-6-3)

ME-420 Tool Engineering II

An advance course in tooling following through jig & fixture design into the design of basic types of dies, the understanding of which makes mass production a reality. (0-4-2)

ME-421 - ME-422 Design of Machine Elements

Theory and problems involving both analysis and design of machine parts used in the construction of modern machines. Some of the machine parts studied are: shafts, keys, couplings, clutches, brakes, screws, bearings and lubrication, gears, cams, springs, and flywheels. Consideration is given to such factors as strength, stress concentrations, heat treatment, inertia forces and fatigue failure. (3-0-3) (3-0-3)
Prerequisites: ME-310, ME-315

ME-423 - ME-424 Machine Design

A continuation of machine design involving the analysis and design of complete machines such as reciprocating engines, punch presses and machine tools. (0-6-3) (0-6-3)

ME-425 Fluid Mechanics

A study of the properties of ideal fluids, flow of compressible and incompressible fluids in pipes and open channels; measurement of pressure and quantity rate of flow. (3-0-3)
Prerequisites: P-2, ME-310

ME-426 Mechanical Engineering Laboratory

For senior students in the Mechanical Engineering course. Experiments in the field of heat power, fluid mechanics, and mechanical properties of engineering materials. (0-3-2)
Prerequisites: ME-315, ME-425

ME-430 Graphics

Function scales; slide rules; plots of three variables; use of logarithmic paper; nomographic and propertional charts. Determination of empirical formulae from experimental data. Proper methods of graphical representation of experimental and statistical data. (2-0-2)

ME-501 - ME-502 Engineering Drawing

The basic principles of engineering drawing; use and care of drawing instruments, free-hand lettering, theory and application of orthographic projection, applied geometry, blue print reading, isometric views, and dimensioning.

ME-503 - ME-504 Advanced Engineering Drawing

Precision and limit dimensioning, working drawing, detail and assembly drawings, and welding drawings.

ME-505 - ME-506 Advanced Engineering Drawing

Gears and cams including both working and display drawings. Calculations required for spur, bevel, and worm gears, and the rack. A study of cams of the disc and cylindrical types and their linkages.

ME-507 Tool Design

This course consists of lectures and drawing room practice presenting the fundamentals of tool and die design. Includes a study of accepted methods of construction; proper allowances; fits and tolerance; and the possibilities and limitations of basic designs.
Prerequisite: Basic Engineering Drawing

ME-508 Advanced Tool Design

A continuation of tool design with a study of the application of extruding, die casting, and cold rolled forming to tool design.

ME-510 Machine Shop Practice

Consists of a thorough study of the machinery used in a present day shop. Instruction is given in the use of the fundamental machine tools including the engine lathe, milling machine, grinders, shaper, and drill press.

ME-511 Advanced Machine Shop

Advanced instruction in the machine tool operations including the application of special tools and attachments to production methods.

ME-521 Elementary Strength of Materials

Elementary stresses and strains; stresses due to change of temperature; combined stresses; riveted joint analysis; strength and deflection of beams; re-enforced concrete beams and columns.
Prerequisite: Engineering Mechanics ME-214

ME-522 Machine Design

An analysis of the problems inherent in the proportioning of a machine part. Assumes a knowledge of strength of materials. Included are such topics as stress concentrations and repeated loading; torsion design of springs, screws, brakes, clutches, gears, bearings, and miscellaneous machine elements.
Prerequisite: Strength of Materials.

DEPARTMENT OF CHEMISTRY

Ch-100 General Chemistry

Elementary phenomena and principles are studied in this course together with a treatment of the more common elements and compounds, and the processes of their isolation and preparation, as well as an introduction to the more common types of chemical equations and calculations. The laboratory work is an essential complement of lectures.

Ch-101 College Chemistry

This is an introductory course in Chemistry required of all students attending the Institute, with the exception of those enrolled for the degree in chemistry, during their freshman year. It comprises a general survey of Chemistry, its basic laws and theories, a general study of the commoner elements both metallic and non-metallic and a study of the use and application of chemistry to daily life. In the laboratory work which accompanies this course, the student performs experiments selected with a view to enabling him to learn to draw correct conclusions from definitive happenings. It also enables him to acquire a certain manipulative technique in using the basic chemical tools.

Ch-102 College Chemistry II

A continuation of CH-101. Second semester.
Prerequisite: Ch-101

Ch-111 Inorganic Chemistry

This course is required of those students matriculating in the Bachelor of Science degree in Chemistry. The course comprises a thorough study of basic chemical facts: study of matter, atomic structure and its applications to chemical reactions, the states of matter, solutions and equilibrium; the elements of Period III and their compounds are studied in greater detail in order to show more clearly the relation between atomic structure and chemical properties. The laboratory work accompanying this course is designed to accompany the lectures very closely and thus enable the student to apply his theory.
Prerequisite: High School Chemistry

Ch-112 Inorganic Chemistry II

A continuation of Ch-111. Second semester.
Prerequisite: Ch-111

Ch-113 Qualitative Analysis

This course enables the student to tell what inorganic, and a few organic, substances are present in a compound. The latest semi-micro technique of analysis is used. In the laboratory the student applies what he has studied in the analysis of both "known" and "unknown" materials. Problem work dealing with equilibrium and the other important phases of qualitative analysis is stressed and the student is taught how to think for himself.
Prerequisite: Ch-112

Ch-114 Stoichiometry

A study of the various types of calculation involved in the study of chemical principles. Ofttimes called "Chemical Mathematics."
Prerequisites: High school mathematics, Ch-111.

Ch-201 Textile Dyeing

This course is designed to acquaint the student enrolled in Textile Engineering and Textile Technology with the fundamental properties of the several classes of dyes as related to their ability to color textile fibers and to acquaint him with terms and practices of their use in the industry.
Prerequisite: Ch-102

Ch-202 Quantitative Analysis

This is a semester course designed primarily for students in the Textile Technician Course. It is so designed that the student acquires a working knowledge of the fundamentals of volumetric and gravimetric analysis: concentration of solutions normality and how determined, use of the burette and other volumetric apparatus, simple neutralization titrations, pH—its meaning and properties; the use of analytical balance, the make-up and use of the Gooch filter, chemical factors and their applications, simple gravimetric processes.

Upon successful completion of this course, the student is well equipped to perform simple routine analytical work and understand what he is doing.
Prerequisite: Ch-102

Ch-203 Screen Printing

This course is particularly adapted to the needs of the students in the Textile Design and Fashion course. It is given in collaboration with that department and trains the students in the mechanics of screen printing. The student makes his own design, cuts his stencil, makes his screen, prints his own pattern and thus obtains a good idea of the potentialities of silk screen printing, especially as pertains to his particular field.
Prerequisite: Ch-104

Ch-204 Screen Printing II

A continuation of Ch-203. Second semester.
Prerequisite: Ch-203.

Ch-205 Screen Printing

This is a semester course given in collaboration with the Designing Department to the students in the Textile Technician Course. The students learn how to make their own designs, their own screens, how to print their designs and finish the prints. They are given some training in the making of the pastes and dyes and the simplified reactions involved in the printing.
Prerequisite: Ch-102

Ch-211 Quantitative Analysis I

The lectures in this course comprise a thorough and complete discussion of the theories of solutions, a quantitative approach to oxidation-reduction reactions (rodox reactions) and a study of some precipitation

methods. The laboratory work is an application of the lectures. It consists of the calibration of the volumetric ware used and the analysis of materials by neutralization, oxidation-reduction and precipitation methods. Quality rather than quantity is stressed.
Prerequisites: Ch-113, Ch-114

Ch-212 Quantitative Analysis II
This course is a continuation of Ch-211 and consists of a study of the gravimetric methods of analysis.
Prerequisite: Ch-211

Ch-221 Introductory Textile Chemistry
This course consists of (1) a study of the physical and chemical constitution of the textile fibers, both natural and synthetic; (2) a study of the physical and chemical changes that result from the action of various inorganic and organic agents on the fibers; and (3) a study of the methods of application and the effects of the various classes of dyes on the fibers.
Prerequisite: Ch-112

Ch-222 Dyeing
This course consists of (1) a study of the preparation of the textile fibers for dyeing, and (2) a study of the application of the various classes of dyestuffs to the textile fibers.
Prerequisite: Ch-221

Ch-231 Organic Chemistry
A systematic study of the chemistry of the compounds of carbon as presented by the more prominent authorities in the organic field. Proper laboratory practice acquaints the student with the set-up of organic laboratory experiments and the synthesis, identification and proper handling of the compounds.
Prerequisites: Ch-112, Ch-113

Ch-232 Organic Chemistry II
A continuation of Ch-231. Second semester.
Prerequisite: Ch-231

Ch-311 Instrumental Analysis
This is primarily a laboratory course in which the student studies the analysis of various materials by means of analytical instruments. He studies the theory involved in the use of optical (colorimeters, abridged spectrophotometers, spectrophotometers) instruments, electrical (pH, potientiometry, electroanalysis) instruments and others. The laboratory work enables the student to make use of this theoretical knowledge in using the instruments.
Prerequisites: Ch-212, Ch-232

Ch-312 Instrumental Analysis II
A continuation of Ch-311. Second semester.
Prerequisite: Ch-311

Ch-321 Advanced Dyeing I

This course is taken concurrently with Ch-342 in order that the special attention necessary in preparing ground shade for discharge printing and the details of over-dyeing resist printed fabrics may be better understood by the student. The theory of the selection of dyes for those purposes and the need for the addition of special chemical agents to the dyebaths is studied in detail.

Prerequisite: Ch-222

Ch-331 Advanced Organic Chemistry

The study of more complex organic compounds and reaction mechanisms, with emphasis being placed on dyestuffs and their intermediates.

Prerequisite: Ch-232

Ch-332 Advanced Organic Chemistry

Study of the laboratory practice of synthetic organic chemistry, with particular emphasis on the methods of isolating and purifying organic compounds.

Prerequisite: Ch-232

Ch-341 Textile Printing I

In this course the student is introduced to the methods of textile printing (roller, screen, hand block, etc.) and the basic styles of printing (direct, discharge and resist). The preparation of print pastes for direct style printing of direct, basic, mordant insoluble azo, vat, leuco vat dyes, resin bonded pigments and oxidation colors is considered in detail, especially the complex chemical considerations of many of these print color preparations. All prepared color pastes are roller printed and the prints finished off by the students.

Ch-342 Textile Printing II

This course is taken concurrently with Ch-321. The more complex styles of printing, discharge and resist, are covered in detail. The preparation of white and colored print pastes for all classes of dyed backgrounds is considered. All print pastes are screen printed and the prints finished off by the students.

Prerequisite: Ch-341

Ch-351 Bacteriology

An introductory course in bacteriology. The lectures present the fundamental concepts of this science and explains to the student bacterial classification and the significance of pathogenic and non-pathogenic micro-organisms. The laboratory work includes: (1) preparation of

culture media; (2) sterilization of equipment and cultures; (3) aseptic preparation and handling of pure cultures and (4) simple and differential staining.
Prerequisite: Ch-222

Ch-352 Microbiology

This course includes the study of various micro-organisms and their importance to man and his textile world. Sterilization, disinfection, fumigation and staining, and methods of studying the action of molds and bacteria on textile fabrics are studied. Laboratory work includes the preparation and sterilization of the specific culture media, the staining and microscopic observation of the specific bacteria involved, and mildew and rot-proofing tests on textile fabrics.
Prerequisite: Ch-351

Ch-360 Chemical Literature

A study of the sources of information of chemistry. The course is designed to familiarize the student with the numerous journals, source books and other founts of information available to him. It requires a thorough grounding in, and facility in reading, German or French. The student will be expected to finish and hand in a report, on a phase of chemical literature chosen by the instructor, before credit will be given.

Ch-382 History of Chemistry

A survey course of the art and science of chemistry from prehistoric times to the present day.

Ch-393 Biochemistry

A study of the nature of the chemical processes in animals and of the metabolism of foods. The study includes the chemistry of proteins, carbohydrates and fats. In the laboratory the student deals with the more important biological substances and certain body fluids (blood and urine).
Prerequisite: Ch-332

Ch-401 Colloid Chemistry

An introduction to the colloidal state of matter, covering a consideration of the characteristics and behavior of colloidal substance; methods of preparing colloidal substances; a study of natural colloidal substances and a special study of the application of colloidal behavior to the chemistry of textiles, dyeing and finishing.

In the laboratory the student observes the fundamental characteristics and behavior of materials in the colloidal state; learns how to prepare

colloidal substances and applies this knowledge to selected problems dealing with textile chemistry, dyeing and finishing.
Prerequisite: Ch-412

Ch-402 The Structure and Manufacture of Fibers

This is a lecture course for advanced students in Textile Engineering and Textile Technology. The course includes (1) a discussion of the fundamentals of fiber polymer structure and its relation to their physical properties and (2) the manufacture of man-made fibers starting with the raw materials up to their emergence as fibers.
Prerequisite: Ch-201

Ch-403 Introductory Textile Finishing

This is a course set up for the students enrolled in the Textile Design and Fashion Course and deals with the application and end use of the various classes of textile finishes.
Prerequisite: Ch-104

Ch-411 Physical Chemistry

A study of the fundamental laws and theories of chemistry and of the various factors which modify and change the reactions and properties of chemical substances. The laboratory work is chosen to illustrate the principles studied. The problems given are a very important part of the course and quantitatively exemplify these principles.
Prerequisites: Ch-212, M-204, P-202

Ch-412 Physical Chemistry II

A continuation of Ch-411. Second semester.
Prerequisite: Ch-411

Ch-421 Advanced Dyeing II

The theory and practice of color matching are principally emphasized in this course. The student is taught the proper methods of obtaining a given shade by using a combination of several dyes. The testing of various classes of dyestuffs for their coloring powers and money value is included. The characteristics of the various dyestuff combinations is considered.

The more important AATCC tests procedures are also carried out.
Prerequisite: Ch-321

Ch-431 Chemistry of Textile Fibers

A course emphasizing: the relationship between the chemical structure and physical properties of fibers; the nature of the chemical reactions

which produce degradation of fibers; the production of synthetic fibers. The short laboratory period is devoted to tests that serve to identify the types of fibers and their degradation products.
Prerequisite: Ch-232

Ch-441 Industrial Chemical Analysis

The student learns how to determine the properties, and to analyze many of the chemical materials used in the textile industry. He will analyze soap, bleaching agents, caustic soda-ash, etc. He is expected to apply the knowledge and experience acquired during the previous courses in Chemistry.
Prerequisite: Ch-312

Ch-442 Industrial Chemical Analysis II

This course, a continuation of Ch-441, teaches the student how to analyze coal, oil, water, certain types of organic materials (using the Kjeldahl Method) and finishing compounds.
Prerequisite: Ch-441

Ch-451 Textile Finishing

This course is restricted to students in the Textile Chemistry Course and deals with the application and end uses of the various classes of textile finishes and the procedures used in the application of these finishes to fabrics.
Prerequisite: Ch-321

Ch-452 Textile Finishing II

This course, a continuation of Ch-451, gives particular attention to special finishes, such as water repellant, fire retardant and crush resistant effects. This course is supplemented by field trips to various plants. bleacheries, dyehouses and textile printing plants.
Prerequisite: Ch-451

Ch-461 Organic Qualitative

In the first semester the student learns the systematic methods for the classification and identification of organic compounds (qualitative).
Prerequisite: Ch-332

Ch-462 Organic Quantitative

During the second semester the student determines, by so-called ultimate analysis, the quantity of carbon, hydrogen, oxygen, halogens, and other substances usually present in organic compounds (quantitative).
Prerequisite: Ch-461

Ch-491 Industrial Chemistry

The student undertakes a detailed study of the more important chemical industries. Field trips to various plants will be arranged with a view to crystallizing what the student has learned and a detailed report will be expected.

Prerequisites: Ch-112, Ch-212, Ch-232

Ch-471, Ch-472 Thesis

Every student, in his senior year, is obliged to undertake, and report on, some original research problem. The choice is left to the student under the supervision of the members of the Department of Chemistry. The student is left on his own in order to help him develop originality in thought and action. However, frequent consultation with his thesis supervisor, at least once a week, enables the student to make certain that he is not going astray nor that he is wasting his time and effort.

Ch-481 The Chemistry of Food and Nutrition

The student learns of man's needs for the various constituents of foods. He also learns how to analyze foods and how to determine the nature and extent of food adulteration.

Prerequisite: Ch-332

DEPARTMENT OF TEXTILES

DIVISION OF YARN MANUFACTURE

TE-101 Pickers and Cards

Cotton yarn mill machinery. Lists of processes in cotton mills for different numbers of yarn. Proper sequences of processes.

Objects of blending cotton. Methods of mixing same.

Methods of blending and mixing the different types of synthetic fibers.

Bale breakers and opening and cleaning machinery. Picker rooms. Automatic feeders, construction, capacity, and suitability for the purpose intended. Various styles of openers, their use and object. Connection of feeders to openers. The various types of cleaning trunks.

Calculations in connection with openers, breaker pickers, intermediate and finisher pickers, and single process pickers with blending reserve.

Construction of aprons, beaters, bars, screens, fans, lap heads, evener motions, measuring motions, etc. The setting and adjusting of the different parts of these machines.

The revolving top flat card. Its principal parts described, including feed, lickering cylinder doffer, coiler, screens and flats. Different setting arrangements. Calculations in connection with all types of cotton cards.

Clothing, grinding, setting and stripping cards.

TE-102 Cards and Drawing Frames

Study of Cards continued.

Drawing frame roller drafting, setting and calculations. Method of arranging and constructing drawing, frames, its use and objects. Gearing, types of weighing and stop motions. Varieties of rolls.

TE-201 Roving and Spinning Frames

Slubbers, first and second intermediates, inter-draft, long draft, roving frames and jack frames. The construction and use of these machines. Calculations in connection therewith. Changing, fixing and re-setting frames, etc.

The ring spinning frame, its construction and use. Its principal parts, as creels, rolls, rings, travelers, speeds, builder motions, calculations, etc.

TE-202 Advanced Calculations and Costs

Figuring the number of doublings and amount of draft required from picker to spinning frames.

Calculations for organization of machinery required for different counts of yarn. Amount of production and cost of production of yarn.

Practice work consists of running work from picker to spinning frames.

TE-301 Twisters

The object of twisting. Wet and Dry Twisting. The different methods of preparing yarns for twisting. The direction and amount of twist in different ply and cord threads. Size of rings and travelers for the different counts of yarn. Calculations for twist and production.

TE-302 Combing

Sliver and Ribbon Lap machines. Construction of the different types of Combers. Methods of setting, adjusting and operation of these machines, and calculations in connection therewith.

TE-303 Applied Research

Research as applied to one or more machines consists of running original work, in laying out the machines to be used for the different types of yarns, as regards speeds, weights, etc., from the raw stock to the finished yarn. Tests at the different processes. Methods of testing. Blending and running all kinds of natural and synthetic fibers.

TE-203 Cotton Classing

Different species of cotton plants. Cultivation of cotton. The different varieties of cotton and the classes of goods for which they are best adapted. Cotton picking, ginning and marketing. The selection of cotton for different classes of goods. Cotton grading and stapling.

TE-109 Yarn Manufacturing

Yarn manufacture is the name assigned to a course of lectures given to the first year students in Textile Technology, the third year students in Chemistry and the first year students in Machine Design, so that they may become acquainted with the methods employed in the manufacture of yarn and cloth. The various machines are thoroughly described and the methods of using them discussed in the lecture room. Because of the limited amount of time allowed for this subject, the students are not taught to operate the machines, but are given an opportunity to examine them at rest and later to observe them in operation.

DIVISION OF WEAVING

TE-121 Yarn Calculations

Methods to establish the Count, Weight, or Length in all the different types of fibers are given with examples. Equivalent yarn numbering systems. New Fiber systems. Suggested system for universal numbering of all yarns.

TE-122 Warp Preparation

Spooling or winding—The various types of packaging explained on the machine with respect to cost and manner of usage in the next preparatory manufacturing step.

Warping—High speed warping from cones, and slow speed from spools is taught with the necessary instructions for production and cost figuring. Warping with the silk system.

Slashing—The need for sizing. Methods of sizing. Difference in requirements as to heat, kind of size, and methods of operation with the various kinds of fibers. Cotton methods. Rayon methods. Silk methods.

TE-123 Plain Looms

The primary movements required in weaving. Elementary power loom construction. Shedding by cams. Plain cams. Twill and Satin cams.

Side cams. Split time cams. Double set cams. Construction of cams for special conditions. Timing of cams and its effect on the cloth. Methods of calculations for gearing of different cam drives. Picking motions.

Bat-wing and cone motions in detail from a practical weaving basis.

Shuttles—Different kinds of shuttles. Woods and other materials used in their manufacture. Care and treatment of shuttles.

Protector motions.

Reeds—Calculations for reeds. Care of reeds.

Take-up motions—Various kinds, with the necessary calculations to insure the greatest range of use.

Filling stop motions of all types.

Temples—The various types and makes and their distinctive features. The operation and maintenance of plain cam looms. Starting of warps. Faults and remedies in weaving and loom fixing.

Discussions on general loom accessories.

TE-124, 221 Dobby and Box Looms

Looms with a much greater range of pattern than the cam loom. The dobby shedding machine. Dobby construction, with the timings and settings necessary for correct operation. Single and Double Index. Chain pegging and reading. Box looms. Different kinds of drop box mechanisms. Practical settings, with the best operational methods for the different types. Multiplier motions as applied to box looms. Dobby box looms with special weave mechanisms for such weaves as handkerchiefs, terry and other toweling, curtains, etc.

TE-222 Automatic Looms

Draper looms of numerous models. Maintenance, operation, and possibilities of the different models of Draper looms. Practical settings for the feeler and transfer mechanisms. Warp stop motions. Various types of mechanical beam tension control.

Crompton and Knowles multiple box looms, with automatic selective filling transfer. All of the required settings for complete loom operation. Chain building and co-ordination for varied patterns. Stafford shuttle changing looms. All settings for the shuttle changing mechanisms explained in detail.

Student assembly and operation of all the above looms.

TE-321 Jacquards

The principle of construction of Jacquard machines. Single and double lift machines. Jacquard machines for special purposes. Principles of harness tying. Layover, Center tie, etc. Care and treatment of harness lines. Practical work in cutting cards and weaving the student's own designs. Double cylinder Jacquard construction and operation with a 4 x 1 automatic box loom and center filling motion.

TE-322 Special Mechanisms and Costing

Dobby looms with leno mechanisms for the weaving of all Pattern lenos. Requirements and methods for the weaving of lenos on Jacquard looms.

Analysis and application of direct and indirect weave room costs.

Weaving yarn requirements and the preparatory machinery necessary to produce it.

Weave room operation and management under different product labor, and power conditions.

Room lay-outs best suited to different kinds of product.

TE-323 Processing of Synthetic Yarns

This course covers the various conditioning and preparatory process applied to the synthetic yarns which are necessary in the production of synthetic fabrics. These processes include soaking, spooling, throwing, winding, warping and slashing of synthetic yarns.

TE-125, 225, 326, 327 Weaving

This course comprises the fundamentals of the power loom with particular emphasis on the capabilities of the various types of loom. The student is taught the application of plain, dobby and Jacquard looms with reference to the production of different kinds of fabrics. Limitations as to the use of color, regarding costs in the creation of new woven materials, is a part of the course. The student actually weaves his original patterns on the power looms.

DIVISION OF PHYSICAL TESTING AND MICROSCOPY

TE-181 Fiber Technology

An illustrated lecture course on the basic and outstanding microscopic characteristics and physical properties of the various textile fibers. Microphotographic slides of all fibers discussed are used as illustrations; technical data is presented and discussed. The fibers included represent selected specimens of the natural vegetable fibers, the natural animal fibers, the regenerated rayons, the prolons, the synthons, and the mineral fibers.

TE-182, 183 Physical Testing

Moisture—Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Analysis of fabrics for type, construction, yarn sizes, weight and identification of natural and synthetic fibers, with most work being done from small swatches of fabric. Analysis of fiber blended fabrics for type and percent of mixtures. Physical test on fabrics for tensile strength, weight, bow, crimp, tearing resistance, finishing materials, water repellancy, shrinkage and abrasion.

Physical tests on spun and continuous filament yarns with special emphasis on various twist, constructions, weight (number), breaking strength (skein and single end), grades (quality), and methods of determination.

TE-184, 185, 481, 482 Microscopy

A course of study in the use and manipulation of the microscope, elementary optics as applied to the microscope, illumination and accessory equipment and its uses.

Micrometry and measurement techniques and the calibration and use of the different types of ocular micrometers.

Specimen mounting and identification of all various textile fibers. Cross sectioning by several methods with emphasis on the use of the fiber microtome.

Recording Data—Written records, drawing from observation and camera lucida. Photomicrographic apparatus and photomicrographic and dark room technique including adjustment of apparatus, lighting and photographic specimens.

Analysis of fiber blended fabrics for identification and percent of various fibers. Wool grading by the micron diameter method. Denier determination of cut staple synthetic fibers and other special uses of the microscope to the textile technologist.

TE-281, 282 Physical Testing

Cotton Fiber Technology—Length arrays by the Suter-Webb fiber sorter and Fibrograph. Fiber tensile strength by the Pressley flat bundle method. Fineness and maturity.

Testing Project—The student is assigned a testing project on a series of fabrics which consist of testing for comparative purposes. Results are evaluated and presented in thesis form.

TE-283, 284 Photomicroscopy

The use of photomicrographic apparatus and photomicrographic and dark room techniques including adjustments of apparatus, lighting and photographing specimens. Includes work on fabric, yarns, fibers, and all types of textile specimens. Students are assigned lengthy projects and are left to their own initiative.

TE-285 Microscopy

A course of study in the use and manipulation of the microscope, elementary topics as applied to the microscope, illumination and accessory equipment and its uses. Special attention is given to the metallurgical microscope.

Micrometry and measurement techniques and the calibration and use of different types of micrometers.

Recording Data—Written records, drawing from observation and camera lucida. Photomicrographic apparatus and photomicrographic and dark room technique including adjustment of apparatus, lighting and photographing of metallurgical specimens.

TE-381, 382 Physical Testing

Moisture – Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Cotton Fiber Technology – Length arrays by the Suter-Webb fiber sorter and the Fibrograph. Fiber tensile strength by the Pressley flat bundle method. Fineness and maturity.

Physical test on spun and synthetic yarns, including weight (number), twist, combination yarns, breaking strength (skein and single end), yarn evenness, grades (quality), and their determinations.

Physical tests on fabrics for construction, dimensions and weight, tensile strength (grab and strip), crimp, bow, finishing materials, fiber composition and blends, water repellancy, shrinkage, abrasion and wear resistance.

Presentation of data. Statistical analysis and preparation of control charts.

TE-383 Physical Testing

Moisture — Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Physical tests on fabrics for construction, dimensions and weight, tensile strength (grab and strip), crimp, bow, finishing materials, fiber composition and blends, water repellancy, shrinkage, abrasion and wear resistance. Sample analysis from small swatches. Blends.

DIVISION OF WEAVE FORMATION AND FABRIC ANALYSIS

TE-161 Weave Formation I

Definitions of the words and terms used in designing and analysis Characteristics of the various classes of fabrics. Design paper and its application to designing and analysis. Cloth structure, with a study of the various sources from which the patterns of fabrics are obtained Twills. Wave effects. Diamonds. Sateens. Granites. Checkerboards. Rearranged twills. Figured twills.

TE-162 Weave Formation I

Designing for single fabrics continued, such as honeycombs. Mock and imitation lenos. Entwining twills. Spots weaves arranged in various orders. Cord weaves. Imitation welts. Elongated twills. Check effects. Corkscrew weaves. Four change system of designing. Damask weaves.

TE-163 Fabric Analysis I

Standard methods of representing harness and reed drafts. Harness drafts on design paper. Written harness drafts. Chain drafts. Layout plans. Finding weight of warp yarns, weight of filling yarns. Yards per pound of cloth.

TE-164 Fabric Analysis I

Finding counts of warp and filling by various methods. Finding yards per pounds of cloth from a small sample by weighing. Making original designs and weaving them on the power loom. Reproduction of woven samples.

TE-165 Introductory Textiles

This course is designed for the purpose of indoctrinating Freshmen of Textile major courses in the non-technical phases of the textile business. It gives the student an elementary understanding of yarn and fabric production, origin of materials, and use and performance characteristics of various textile materials.

TE-166 Introductory Survey of Textiles

An introductory course designed to familiarize the student with elementary and non-technical phases of the textile industry. A study of the definitions of the common terms used in manufacturing and finishing of textiles. Properties and characteristics of the common natural and man-made fibers. Flow-charts of the principle fibers, from raw stock to finished fabric.

TE-167, 168 Fabric Classification

A study of characteristics of a wide range of staple fabrics made of cotton, wool, rayon, silk, nylon, orlon, azlon, glass and other fibers. In this subject, the student is supplied with samples of the various materials together with the information pertaining to their characteristics such as construction, composition, weave, performance and uses. At the conclusion of the subject, the student has a notebook containing about 300 samples of staple cloths and the data applying to each sample.

TE-169 Fabric Classification

A course relating to the characteristics, performance, properties and uses of a wide range of staple fabrics. Special emphasis placed upon the manner of producing various textures in woven fabrics, incorporating both natural and man-made fiber content.

TE-261 Weave Formation II

Designing for more complicated fabrics such as figure fabrics using extra materials. Fabrics backed with extra material. Fabric having the face and back of different material or pattern. Double plain fabrics. Reversible fabrics. Embossed effects, such as Bedford cords, piques, Marseilles weaves.

TE-262 Weave Formation II

Continuation of the study of the construction of double woven type fabrics. Designing of various woven leno patterns, including marquisette plain and marquisette with extra filling patterns, 3-end weaves, inverted doup lenos, check lenos, Jacquard effects. Preliminary study of pile woven cloths.

TE-263 Fabric Analysis II

The analysis of woven fabrics to secure the necessary information for reproducing materials containing weaves such as those studied under TE-261. The student is required to create an original pattern within this category.

TE-264 Fabric Analysis II

The analysis of fabrics studied under TE-261-262. Special emphasis upon weave details, drawing-in plans, and chain drafts for various types leno woven fabrics.

TE-265 Color

A study of the theory and facts of color so that the student of textile courses can understand the use of the performance of colors when applied to fabrics. The course includes hue, value and chroma scales, complementary colors, harmony and color effects.

TE-266 Fabric Analysis

Advanced study in the reproduction of woven fabrics, incorporating more complicated weaves, drawing-in plans and chain drafts than those included under TE-163-164. Re-styling of patterns based on adjusted fabric construction and composition.

TE-267, 268 Hand Loom Weaving

The hand loom, its construction and use. Harness drafts as affecting the weave. Building harness chains. Practice on the hand loom in weaving fabrics from original and other designs, and putting into practice the designing lessons.

TE-269, 270 Fabric Classification

The first part of this course is concerned with an elementary study in weave formation and fabric analysis to acquaint non-textile engineering majors with the principles of technical fabric designing. Following, the student is supplied with a representative number of staple type fabrics together with a description as to construction, composition, performance and uses.

TE-361 Jacquard Designing

Design paper. How to figure the design paper necessary to reproduce any Jacquard pattern. Defects of Jacquard patterns and how to avoid them. Transferring designs to plain paper. Transferring sketches to design paper. Changing the sley of Jacquard fabrics. Methods of casting out. Ground weaves. Rules for finding sley, pick, warp and filling. Foundations upon which Jacquard patterns are based.

TE-362 Jacquard Designing II

Different methods of making designs. Sketching original designs by the different methods commonly used. Working out the sketches upon design paper. Cutting cards on the piano card-cutting machine. Card lacing. Weaving of at least one original design.

Harness tying. Various systems of tying Jacquard harnesses. Lay-over ties. Center ties. Compound ties.

TE-363 Fabric Analysis III

Analysis of more difficult samples continued. Methods of analysis of various rayon fabrics. Finding average counts. Percentage of each material. Production of loom. Price per yard for weaving. Weaving of more difficult original designs.

TE-364 Fabric Analysis III

Continuation of the work outlined in TE-363. Weaving of students' original Jacquard designs. Work on cost of manufacturing fabrics.

TE-365 Styling

Study of common fabrics. Application of cloth analysis to the requirements of a converter or of a commission house.

Methods of ascertaining counts of warp and filling; also sley and pick for new fabrics.

Determining use of colored yarns in striped and figured fabrics with relation to cost of dyed yarns and woven colored patterns.

This is a continuation of analysis. Changing the construction of fabrics. Making sketches for alteration of fabrics. Finding cost of fabrics.

DIVISION OF KNITTING

TE-241 General Knitting

This is an introductory course in knitting covering the basic principles of circular and flat bed machines and their fabrics. This includes the study of their gauge and elements, productivity and the various classes of machines.

TE-242 General Knitting

This course involves a complete study of the dismantling and erecting of each machine and includes a recognition of the various cams and their replacements. Circular, jersey, rib and hosiery machines are covered.

TE-243 Knit Fabric Analysis

This course is to determine the different characteristics found in various patterns and stitches. It also covers fabric identification relative to each class of machines.

TE-244 Knit Fabric Analysis

An advanced study in methods of analysis comprising more elaborate type materials in the reproduction and designing of knit fabrics. The student develops numerous patterns capable of being produced on various type machines.

TE-245 Flat Knitting

This step in knitting is to recognize the differences between the various warp knitting machines and classes of full fashion machines. Machines included are hosiery (full fashion), warp knit (tricot), and Raschel type, such as Cidega.

TE-246 Warp Knitting

This course includes a study of warping to create various patterns, as well as the adjustments that are required on warp knit equipment, such as the Tricot and Cidega.

TE-247 Needle Technology

This course covers the study of all types of needles used in the knitting and sewing trades. Student must have full respect of its study because it is a key point in its field. It includes the straightening, alignment and correct ways of handling segments that involve the quality of fabrics and efficiency of machines.

TE-341 Warp Knitting

A study of the relation of wrap knit machines to the variety of stitches, patterns, types of yarns capable of being used and other factors incidental to this class of knitting.

TE-342 Flat Knitting

This comprises a complete study of the full fashion hosiery machine, its maintenance, its production and the designing of hosiery, following through to a finished product.

TE-343 Knit Fabric Analysis

A study of characteristics of various type knitted fabrics from the standpoint of stitch, construction and pattern. The student is taught how to analyze different types of fabrics for purpose of reproduction. Included, is the analysis of hosiery and half hose for factors of construction, wear, size, standards, etc.

TE-344 General Knitting

This is an introductory course to cover the principles of circular and flat bed knitting machines and the types of material they produce, covering designing, cost finding and finishing in all phases of knitting fabrics.

TE-345 Motion and Timing

A study of the methods and motions relative to each class of knitting machine. Timing is studied with regard to repairing procedures, development of new patterns and parts replacement.

TE-346 Braiding Principles

This course is to familiarize students with methods of producing braid and to understand its machinery, in flat and round braid.

TE-347 Supplementary Machines

A course in which the student is trained to repair and correct defects in sewing machines, such as looping, backseaming. Finishing equipment, preboarding and setting of fabric and yarns and the winding and packaging of all types of yarns are a part of the course.

TE-348 Sewing Machine Maintenance

This course is a general sewing machine course, covering all types and classes found in the garment industry. The student is trained in the uses, performance and maintenance of the equipment.

TE-349 Mill Engineering

This course consists of lectures, supplemented by work in the drafting room. Problems in design construction and equipment of a knitting factory are studied. Floor plan and required equipment are determined by the student in solving a problem comprising a particular production of a certain type of knitted material. Generating and transmitting of power, types of power drive, methods of lighting, heating and ventilation are a part of the course.

DIVISION OF SEWING MACHINE OPERATION AND MECHANICS

This course is set up strictly on the two-year plan with recognition given for the last semester to be served partially in plant.

TE-250, 251 Machine Classification

This course is to acquaint students to classify each machine in its own type class and capacity of speed required by manufacturer.

TE-253, 254 Time Study and Cutting

This course is to enable students to lay out machines in cutting and stitching department for greater efficiency, methods of handling fabric for a synchronization program.

TE-255, 256 Timing and Assembly

This step in this course is the major one because its laboratory hours create a good maintenance man. It requires tearing machines apart and assembling them until students have all parts and numbers recognized for better understanding of the functions of machinery.

TE-350, 351 General Stitching

This step in the course consists of lectures on fabrics, thread, needles and all subjects included in stitching, stitch classification and style. It also requires all students to handle and sew on all types of machines to enable them to teach or instruct stitchers in industry.

TE-352 Maintenance

This course consists of round table discussions on all types of machines. These machines cover ninety percent of those found in industry which are Metropolitan, Willcox & Gibbs, Merrill, Singer, Union Special and a variety of special machines. These discussions cover construction, timing, various adjustments, motor, table adjustments and cutting room layout.

TE-353 Maintenance

This is the final step in the course with added study to stitching on fabrics of all types, with the handling of folders and attachments to be applied to any or all machines.

TE-354, 355 Time Study and Manufacturing

This step is to check speeds of machinery relative to labor and garment construction. This will enable a student to get a general picture of garment assembly, working conditions and machine evaluation. This will also include cutting room problems such as fabric layout, packaging and bundling, and work relay to operators.

DIVISION OF TEXTILE DESIGN AND FASHION

TD-101, 102 Nature Drawing

The study of structure, pattern, color and texture of natural objects. Plates also stress design and drawing. Students begin with pencil and then use watercolors and pen and ink.

TD-103, 104 Life Drawing

The study of the human figure, its mass, form, and proportions with emphasis in the first year on action drawing. Course in Anatomy No. 70-111 assists the student in learning about the human form.

TD-105, 106, 204, 205 Drawing and Painting

This course is concerned with learning the uses of all media such as pencil, charcoal, pen and ink, brush and ink, watercolors, and oils. The student draws and paints from still life setups, outdoor study, and landscapes.

TD-107, 108 Design

Experiments in basic elements of design to develop the students awareness of the world, to stimulate his imagination and to help him realize and improve his own potentialities. Problems are in two and three dimensions involving line, form, area, color, texture and space.

TD-111, 112 Anatomy

A study of the bones of the skeleton, the muscles, and complete construction of the human figure. This is the basis of life drawing, fashion illustration and fashion design.

TD-113 Lettering

Begins with study of skeleton letters and calligraphy. Built-up letters and the effective use of lettering follows.

TD-201 Nature Drawing

Rendering in watercolor, tempera and scratchboard.

TD-202, 203 Life Drawing

An advanced drawing class often using a fashion model for illustration classes as well as life model. Life drawings are sustained studies and modeled figure drawings.

TD-114, 115, 206, 207 Art History

This course, Art History, is coupled with art appreciation to give the student a broader understanding of, and a sensitivity for, cultures of the past, the present, and the future. The design of artifacts from other cultures is also of importance to the design student. Frequent visits to museums of art are included in the course.

TD-208, 209 Textile Design

Begins with the practice of block printing to illustrate various methods of repeat. Students experiment with color, pattern, and texture in block prints, screen prints and hand woven fabric.

TD-210, 310, 311, 405, 406 Fashion Illustration

Setting up of the fashion figure; development of rendering and techniques for reproduction purposes; and interpretation of fabric textures. Sketching from fashion models. Further study of reproduction for newspapers and magazines. Field trips to engravers and newspapers. Study of layout and advertising necessary to the fashion artist.

TD-302, 303 Textile Design & Screen Printing

Theoretical problems in fabric design and printing keyed to industrial production for a variety of uses. Includes wrapping papers, wallpapers, etc., as well as fabric design. Integrated with professional textile design to carry to completion a number of printed designs each semester. Students cut and adhere film, prepare screens, make print paste, figure repeats, and print their own cloth.

TD-308, 309, 403, 404 Handloom Weaving

This course gives the student the opportunity to get back to the basic principles of weaving and experiment with many combinations of

materials in order to seek new textural effects which can be reproduced on the power loom.

TD-312 Fashion Fundamentals

A survey of periods, sources, and individuals with relation to their influence on fashion. Designing for the individual according to type, coloring, and figure proportions.

TD-313, 407, 408 Fashion Design

A study of the fundamental principles of the trade procedures in pattern drafting and draping. Work in the construction and use of basic patterns is followed by advanced methods and use of personal measurements in pattern drafting. A study of the reaction of all fabrics in relation to the apparel requirements.

TD-314 Fashion Model

Drawing from a live fashion model to observe fabric on the human figure; rendering of fabrics, drape and details of garment. Observation of detail and freedom in sketching is achieved in drawing from life.

TD-315 History of Costume

Survey of clothing development from earliest times to present day. The utilization of source material from libraries and museums, etc. Students build up their own sketch book for use as reference material for future design problems.

TD-401, 402 Textile Design

More complex problems in fabric design and experiments with diverse effects using the silk screen process. Second semester begins individual work on the thesis for presentation before graduation.

TD-409 Degree Project

During the second semester of the senior year each student selects a specific part of the textile design and fashion field on which he will do a required amount of research and creative work. This project must be submitted for approval before graduation.

DEPARTMENT OF ENGLISH

E-101, 102 English Composition

The ability to speak and write clearly and correctly is a basic skill, an essential tool for all learning and leadership. In the first semester, grammar and punctuation, sentence and paragraph structure will be considered. In the second semester, the analysis and organization of materials will be stressed. One period of each week in the second semester will be devoted to oral composition. In both semesters students will submit frequent themes to demonstrate the grasp of the concepts involved.

E-103 Business Writing

Attempts to introduce the undergraduate student to the practical features of business letter writing. Stenographic details are touched upon lightly. Extraneous matter is omitted. Main emphasis is placed on the most effective point of view.

E-401 Technical Report Writing

This course is designed to meet the requirements of technical reporting. Its approach is a flexible one; for this reason it is concerned merely with basic principles relating to structure, organization, and effective communication. No attempt is made to establish any standardized forms in technical report writing.

E-402 Public Speaking

Modern society demands that a college graduate speak effectively and clearly. This course is designed to meet these demands made upon the college graduate. The course will discipline the student in the criterion of speech construction and delivery. Students will have ample opportunity to address groups and thereby receive the benefit of constructive criticism.

DEPARTMENT OF SOCIAL SCIENCES AND HUMANITIES

H-110 General Psychology

An introductory course to assist the student in developing an understanding of the fundamental principles of psychology and their application. Among the topics to be included are: growth and development, motivation, learning, emotion and feeling, intelligence, human adjustment, mental illness, vocational guidance and crime and delinquency. Special attention will be given to the study of the dynamics of mental hygiene and the adjustive process.

H-120 Government

The aim of this course is to make the student realize that political and governmental processes are a living reality. Continuous attention to the human element and to phases of working politics will bring the student to a more personal acquaintance with our national government. A discussion of the general principles of American democracy will be followed by a description of the two party system. Political parties will not be considered as an end in themselves but rather as a mechanism for carrying out the broader goals of democracy.

Stress will be laid upon the growth of our federal government, the legislative, judicial, and executive branches under the Constitution.

H-201, H-202 Elementary German

Introduction to German grammar. Oral and written grammatical work, conversation, translation, with a view to the acquisition of a basic German vocabulary.

H-230 Economics

This course is designed to assist the student in developing an understanding of the principles of economics and their application in everyday life. Among the topics to be included are: the nature of production, the

arrangement of the productive factors, basic characteristics of capitalism, the organization of business, the problem of business risks, the process of exchange, principles of money, and investment and commercial banking.

H-231 Economics

This course is a continuation of H-230. Among the topics to be included are: central banking in the United States, the business cycle, fluctuations in purchasing power, principles of price determination, costs of production, international trade, payment of international obligations, and the distribution of income.

Prerequisite: H-230

H-232 Orientation to Business

An introductory course to acquaint the student with the various facets of business under our capitalistic system. Among topics to be included are ownership, finance, inventory and production controls, marketing, accounting and financial statements, business law and sources of business information.

H-301 Intermediate German

Review of grammar, advanced oral and written German composition. Reading of German prose texts of intermediate difficulty.

Prerequisites: H-201, H-202

H-340 Sociology

The aim of this course is to aid the student in developing an understanding of the principles of sociology in order that he may live more intelligently and deal more effectively with the social problems of the world about him.

Topics to be covered in the course include factors in the social life of man, the role of culture, heredity and personality disorganization, group life, suggestibility, status, cooperation, competition, conflict, population distribution and growth, communities, social institutions and social change.

Special attention will be given to some of the current social problems.

Prerequisite: H-110

H-411 Industrial Psychology

A study of the principles of psychology as applied to industry and business. Topics to be included are: individual differences and their nature, job satisfaction, industrial morale, incentive, job analysis, leadership and supervision, industrial conflict, unemployment, theory of psychological testing in industry, measurement of attitudes in industry, fatigue, accidents, the maladjusted worker and the Hawthorne studies.

Prerequisites: H-110 and H-340

H-412 Applied Psychology

A study of the application of the findings of psychologists to the problems of everyday life. Special attention will be given to the problems in the student's field of specialization. Topics to be included are: public opinion and propaganda, consumer and advertising research, selection of advertising appeals, psychology in music and art, psychology applied to mental health, psychology applied to industry and business, psychological effects of nutrition, drugs, alcohol and tobacco, and psychology applied to crime.

Prerequisites: H-110 and H-340

H-413 Psychology of Adjustment

A study of the dynamics of adjustment. Topics to be included are: primary and secondary needs, frustration, conflict, adjustive and nonadjustive reactions, the neurotic adjustment, the psychotic adjustment, the nature of psychotherapy and a positive approach to mental health.

Elective

Prerequisite: H-110

H-414 Social Psychology

A study of the influences of social conditions on the psychological processes. Topics to be included are: role and status, social class, leadership, social frustration, effects of group situations, prejudice, public opinion, mass communication and propaganda and abnormal social situations.

Elective

Prerequisite: H-110

H-421 U. S. History

The aim of this course is to provide the student with a clear over-all picture of the history of the United States to the present time. Emphasis will be placed on such topics as: the founding of the National Government, the Civil War, industrialism, expansion, World War I, world depression, the New Deal and World War II. Special attention will be given to the period from World War I to the present.

Elective

H-422 World History Since 1900

A study of the major world developments since 1900 and their impact on United States' policy. Special attention will be given to such developments as the Spanish American War, World War I, the rise of communism and fascism, world depression, World War II and the United Nations.

H-433 Industrial Management

This course provides an overview of the interrelationship of all the basic functions of business and industrial organization. Among topics

to be discussed are product development, physical facilities, production control, materials control, quality control, wage and salary administration, office management, sales and advertising, and industrial relations.

H-441 Social Problems

The purpose of this course is to assist the student in developing an understanding of and an appreciation for some of the major social problems. Among the problems to be investigated are: crime, juvenile delinquency, divorce, the aged, unemployment, mental illness, alcoholism. poverty and depression.
Elective
Prerequisite: H-340

H-450 Labor Relations

A brief history of unions in America is essential for the proper perspective in determining the place of unions in our economic structure. A study of the scope, causes and consequences of the more important labor problems, such as those of insecurity, wages and income; the attempts to solve these problems by means of collective bargaining. Two periods a week for one semester.
Prerequisite: Economics H-231

H-460 German

A basic course in the German Language for scientific purposes. Elementary grammar giving a facility in reading and translating works from German scientific literature.

H-461 French

Consists of the same matter as H-460. Deals with scientific French instead of scientific German.

H-470 Philosophy

This course will briefly review the development of the main stream of Western thought from Plato and Aristotle to Saint Thomas. The influence on the perennial philosophy of such figures as Philo, Platinus and Saint Augustine will be discussed. The course will conclude with a contrast between traditional thought and modern materialistic philosophy.

H-480 Public Relations

An introduction to Public Relations including definitions, history of development, contents, the publics, media of communication, tools and techniques, research and problem analysis, and functions of public relations. This course should be of special value to all individuals, and agencies desiring to create scientific procedures for informing and dealing with the public.

DIVISION OF MATHEMATICS AND PHYSICS

M-010 Pre-college Math

A rapid review of the basic operations in algebra, developing into a study of linear and quadratic equations. The fundamental ideas in geometry are discussed, as well as basic trigonometric relations. A brief but thorough study is made of the concept of logarithms.

M-101 College Math I

This course includes algebraic operations, exponents and radicals, functions and their graphs, trigonometric functions, and their graphs, properties of vectors, variation, bionomial theorem. (5-0-5)

M-102 College Math II

A continuation of M-101. Logarithms, the oblique triange, the j operator, linear equations and determinants, quadratic equation and equations of higher degree, the straight line, the conic sections, elements of solid analytic geometry, elements of differential and integral calculus. (5-0-5)

Prerequisite: M-101

M-201 Differential Calculus

Following a brief review of the basic concepts, all the fundamental differential formulas are developed. Emphasis is placed on the application of the derivative. A further study is made of continuous functions, the differential, approximate formulas, hyperbolic functions. (3-0-3)

Prerequisite: M-102

M-202 Integral Calculus

After the standard formulas have been developed, further study is made of integration by substitution and integration of rational fractions. Emphasis is placed on area, volume, length of curve, centroids, moments of inertia, fluid pressure and work. (3-0-3)

Prequisite : M-201

M-211 Business Math

A study of taxes, bank discount, business ownership, retailing, insurance, stock, bonds, annuities, sinking funds. (2-0-2)

M-212 Statistics

A course to acquaint the students with the basic concepts in statistics. A study is made of charts, diagrams, graphs, basic measures of central tendency and variability, special averages, frequency distributions, statistics of frequency distributions, uniform scales, moments, the normal curve. A project in educational research is conducted by the class. (3-0-3)

M-301 Differential Equations (Fall Term)

A study of ordinary differential equations of the first and higher orders with especial emphasis on application to physical problems. A final four weeks of this course will deal with vector algebra, differentiation and integration of vectors and applications. (3-0-3)

Prerequisites: M-201, M-202

P-102 Engineering Physics I (Spring Semester)

High school physics desired but not required. Three lecture and one recitation hours; one two hour laboratory period. Course content: Mechanics: kinetics, statics, elasticity, hydrostatics, hydrodynamics and mechanics of gases. Laboratory consists of measurements in relation to above topics. (3-2-4)

Prerequisites: M-201, M-202 and simultaneous registration in M-203, M-204.

P-201 Engineering Physics II (Fall Semester)

Course content: Electricity and Magnetism: fundamental laws of electrical and magnetic fields, electrostatic fields, potential, steady currents, induced emf's, inductance, dielectrics, capacitance, and elementary transients. Laboratory consists of measurements in relation to above topics. (3-2-4)

Prerequisite: P-102

P-202 Engineering Physics III (Spring Semester)

Course content: Heat: temperature, calorimetry, change of state, heat transfer, thermal properties of matter, elementary thermodynamics. Sound and Geometrical Optics: wave motion, vibrating bodies, acoustical phenomena, geometrical optics, reflection, refraction, mirrors and lenses. Laboratory consists of measurements in relation to above topics. (3-2-4)

P-211 College Physics I (Fall Semester)

This course is designed for students not majoring in engineering. The general subjects to be covered in the first semester are mechanics and heat. Demonstration of physical principles will be incorporated into lecture periods and the laboratory schedule will follow closely the material covered in the lectures.

Prerequisites: One year of secondary algebra and geometry.

P-212 College Physics II (Spring Semester)

This course will follow the same general development and laboratory program as P-211. The subjects covered in this course are sound, light and electricity and magnetism. (3-2-4)

Prerequisite: P-211

M-110 Slide Rule Fundamentals

This introductory course in slide-rule technique deals principally with processes involving multiplication, division, powers and roots. One course will emphasize industrial methods and problems.

M-111 Log Log Deci Trig Slide Rule

This course covers the use of all scales on the Log Log Deci Trig Slide Rule. Multiplication and division. Squares and square roots. Operations involving powers, exponentials logarithms. Trigonometric operations. This course is offered to day students only.

P-203 Physics I (Mechanics)

Composition and resolution of vectors, equilibrium, rectilinear motion, Neston's Laws, motion in a plane, work, energy and power, impulse and momentum, rotation, elasticity, harmonic motion.

P-204 Physics II (Electricity and Magnetism)

Basic phenomena and development of laws of electrostatics, current electricity, electric and magnetic fields.

P-205 Physics III (Thermodynamics and Acoustics)

Temperature, calorimetry and expansion. Transfer of heat, first and second laws of thermodynamics. Thermal properties of solids, liquids and gases. Temperature measurement, mechanical equivalent, latent heats. Wave motion, vibrating bodies and acoustical phenomena.

P-206 Physics IV (Light, Geometrical Optics, Modern Physics)

Electromagnetic radiation, geometric and elementary physical optics. Historical development of atomic physics with emphasis on topics leading to an understanding of nuclear processes. Discussion of particles, accelerator, research apparatus, mass-energy conversion, radiation, chain reaction.

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